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ABSTRACT

This project first identified the specific mathematics, reading, writing, listening, and speaking skills required of an entry-level electronics testing technician (ETT), using a modified DACUM (Developing a Curriculum) occupational analysis process. This approach involves a panel of expert workers from the electronics industry who analyze and define the essential vocational and basic skills of their jobs. Based on the results of those occupational and basic skills analyses and the application of general review criteria for instructional and assessment resources, lists were drawn up of the most relevant basic skills instructional and assessment tools now available through commercial publishers and vocational research and curriculum development centers. Recommendations were made for instructional emphases and for selecting assessment instruments to evaluate students in the areas of mathematics, listening, reading, speaking, and writing skills. A list of the instructional and assessment instruments reviewed makes up the bulk of this document. For each instructional resource, the title, publisher, copyright date, stated objectives, reading level, type of binding, and cost are given with the opinions of the reviewers included. Vocational assessment instruments are described according to their title, skills they appear to assess, item orientation, level of difficulty, number of items, publisher description, cost, copyright dates, type of scoring, type of administration, time required, reporting format, reliability, and validity. Appendixes to the document contain addresses of publishers and research institutes as well as basic skills linked to ETT tasks. (Author/KC)

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LINKING BASIC SKILLS TO ENTRY-LEVEL ELECTRONICS TEST TECHNICIAN TASKS

- INSTRUCTIONAL RESOURCES
- ASSESSMENTS

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Abstract

Mathematics, reading, writing, listening and speaking skills are an integral part of the duties and tasks of most occupations. However, more precise information is needed about which of those basic skills are required in a given occupation. Vocational administrators, curricula developers, counselors, and instructors require more specific basic skills information in order to find and select the most vocationally related basic skills instructional materials. More information is needed in order to find and select the most appropriate basic skills assessment instruments for determining entry and exit criteria for vocational training programs.

The project first identifies the specific mathematics, reading, writing, listening and speaking skills of an entry-level Electronic Test Technician using a modified DACUM (Developing A Curriculum) occupational analysis process. This approach involves a panel of expert workers from the electronics industry who analyze and define the essential vocational and basic skills of their jobs.

Finally, based on the results of those occupational and basic skills analyses and the application of general review criteria for instructional and assessment resources, lists are presented of the most relevant basic skills instructional and assessment tools now available through commercial publishers and vocational research and curriculum development centers.

Note is made of basic skill areas that appear lacking in instructional resources and assessments. Final conclusions and recommendations based on project findings are presented.

Section 1

Introduction

Terminology

Basic Skills:	Essential mathematics, reading, writing, speaking and listening proficiencies.
Basic skills taxonomies:	Classification systems which list the essential types of math, reading, writing, speaking or listening proficiencies.
Electronic Test Technician: (Dictionary of Occupational Titles Code 726.281-014)	A person who performs a variety of electronic, mechanical, and electro-mechanical tests on electronic systems, subassemblies, and parts to insure unit functions according to specifications or to determine cause of unit failure, using full range of electronic test instruments.
Entry-level Electronic Test Technician: *	A person with Electronics training, but no experience, who obtains his/her first position in the field.
Task:	A measurable element of work usually performed by a single worker.
Duty:	A major category of work which consists of related tasks performed by a worker in a given field.
Occupation:	The overall area or field of work into which particular duties are categorized.
Occupational Analysis:	A determination of the duties specific to a given occupation and the tasks that comprise those duties.
Vocational-General:	Applicable to any occupation.

* Hereafter referred to as ETT; entry-level ETT is assumed throughout the report.

Vocational-Specific:	In this report, applicable to the particular occupation of Electronic Test Technician.
Vocational-Specific basic skills:	Fundamental reading, writing, listening, speaking and mathematics abilities required to perform Electronic Test Technician duties and tasks.
Life Skills:	Basic abilities which enable one to cope with the everyday demands of adult existence.
Classroom Skills:	Competencies and abilities which enable a student to function satisfactorily in a structured educational setting.
Placement Test:	An assessment used to determine minimal proficiency for future success in a given learning situation or program.
Diagnostic Test:	An assessment used to determine the nature of specific weaknesses or deficiencies; yielding measures of the components of sub-parts of some larger body of information or skills.
Face Validity:	The acceptability of an assessment and/or assessment situation by the examinee or user in regard to the apparent uses to which the asssment will be put.
Content Validity:	The extent to which the items an assessment contains represent a balanced and adequate sampling of the group of skills and knowledge the assessment is intended to cover.
Predictive Validity:	The extent to which an assessment accurately indicates future success in the areas in which it is being used as a predictor.
Raw Score:	The first numerical result obtained in scoring a test; a direct, unconverted, uninterpreted measure.

Rationale

The basic skills of mathematics, reading, writing, listening, and speaking are an integral part of occupational duties and tasks. However, the basic skills portion of vocational training in an educational setting is not often linked specifically to the technical instruction.

Although instructors of basic skills in a vocational/technical college often have general or intuitive information concerning the basic skills required on the job, they may lack more data-based information which would link basic skills instruction to the technical training they provide. Vocational counselors, curricula developers, and educational administrators also need more specific information if they are to make informed decisions regarding the basic skills requirements of students in vocational training programs.

Few instructional materials have been developed to aid instructors in teaching vocational-specific basic skills. However, recent research has prompted some publishers' awareness of the increased demand for such materials, and they are beginning to respond.

Therefore, it is important to search for those vocational-specific basic skills materials which have already been developed by commercial publishers and by vocational institutions and research centers. If there are not many materials which teach the basic skills for ETT's, the search should be expanded to include resources which teach the basic skills in a vocational-general approach, i.e., using the world of work as a context for situations, readings, exercises, and problems. If vocational-general materials have not been developed for a particular basic skill(s), find at least some traditional materials to teach them with.

Another area of need is that of evaluation tools. Basic skills pre- and post-assessments are important in determining what levels of basic skills proficiencies are needed for entry into and exit from ETT programs. A search needs to be made for basic skills assessments which are vocational-specific. In case there is a lack of such instruments, assessments which are vocational-general, life skills or classroom skills in approach should be included in the search.

Background

Many occupations require the application of basic academic skills for success on the job. The ability to apply basic math and reading skills in work settings can be extremely important. In some instances, errors in skills such as adding and subtracting may even result in the loss of a job.

A study published by the National Institute of Vocational Education illustrates the point that there is a need to define vocational-specific basic skill proficiencies.

> It would be most useful to know the level of basic skill attainment of students in different vocational programs so that the gap, if any, between proficiency of students who are preparing for particular occupations and the demands placed on workers in those occupations can be identified and closed. [1]

The U.S. Office of Vocational and Adult Education also supports the idea of linking basic skills to vocational education in the following statement published in the 1979 Federal Register: "Basic educational skills are essential to all persons, and vocational education must complement basic skills/remedial programs if persons are to succeed in vocational education programs." [2]

Linkage of specific basic mathematics skills to specific occupational tasks has not yet occurred. Thomas Long, in a review of vocational education literature states, "There is a paucity of rigorously defined data which document the critical relationship between specific mathematics skills and specific occupations." [3] Another study, by Long and Herr, suggests that while mathematics teachers seem to know the levels of mathematics required of mathematically-oriented professionals, the math requirements for the crafts and skilled trades have been much more difficult to ascertain.[4]

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1 Corman, Louise, Basic Skills Proficiencies of Secondary Vocational Education Students, Washington D.C.: Vocational Education Study Publication No. 4, U.S. Department of Education, November, 1980.

2 Federal Register (June 13, 1970), p. 33961

3 Long, Thomas E., Basic Mathematics Skills and Vocational Education, National Center for Research in Vocational Education, Ohio State University, Columbus, OH 1980.

4 Long, T.E., & E.L. Herr, "Teacher Perceptions of Basic Mathematics Skill Needs in Secondary Vocational Education." The Mathematics Teacher, 1973.

The Dictionary of Occupational Titles (DOT), Fourth Edition, provides ratings which indicate the complexity of "worker functions" in every occupation. These ratings were designed to provide information concerning the skills necessary in working with data (including numbers, words, symbols, and concepts), people and things. [5] This system addresses the need for both academic and occupational skills on the job. However, the aforementioned National Institute of Education study expresses the limitations of the DOT ratings. "These ratings permit only indirect inferences about the level of reading, writing, and arithmetic skills required in jobs." [6]

Another step toward linking academic skills to occupational tasks is the Vocational Preparation and Occupations Handbook (VPO), which was developed in 1979 by the National Occupational Information Coordinating Committee. [7] The primary purpose of the VPO is to integrate various federal government occupational and educational classification systems. However, the focus of the publication is not entry-level, and the GED (General Educational Development) classification system it employs uses general terms which are difficult to translate into specific basic skills information.

Occupational task analysis is another response to the need for defining the tasks performed by workers and the skills they need on the job. Task analyses are, however, oriented mostly toward occupational tasks, not toward academic skills required to perform the tasks. In a study funded through Massachusetts State College, G. Porter Horne notes that, "Most job (task) analyses have not been specifically oriented toward identifying reading, writing, and math skills required for job performance," and "Business and industry also operate a number of basic skills training programs. However, research on these programs failed to discover any cooperation between task analysts and directors of reading, writing and/or math programs." [8]

In general, teaching basic skills in a vocational context provides students with an opportunity to relate basic academic skills to an occupation for which they have an expressed interest. Because vocational students are motivated to learn the job skills required of the occupation, it is assumed that vocational-related basic skills can add meaning and purpose to the basic skills portion of students' training programs.

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[5] Dictionary of Occupational Titles, Fourth Edition, 1979

[6] Corman, op. cit.

[7] National Occupational Information Coordinating Committee, Vocational Preparations & Occupations, Interim Edition, Vol. 1, Occupational and Educational Code Crosswalk, Ventura County Superintendent of Schools Office, 1979.

[8] G. Porter Horne, Functional Job Literacy: Implications for Instruction, Massachusetts State College System, Boston, MA, 1979.

Project Objectives

The following objectives have been set forth in an attempt to address the need to link basic skills to ETT tasks:

1. Using a modified DACUM method, compile a current and locally relevant list of ETT duties and tasks.

2. Locate and/or develop basic skills taxonomies which are written in performance terms.

3. Analyze each occupational task to determine the basic skills required for task performance.

4. Determine frequency of use of each basic skill (mathematics, reading, writing, listening and speaking) for ETT's.

5. Compile a list of vocational-specific instructional resources.

6. Compile a list of assessments for the vocational-specific basic skills identified in Objective Three.

Project Methodology

A. ERIC SEARCH

An ERIC (Educational Resources Information Center) search was conducted to find literature describing research on basic skills in relationship to the occupation of ETT. Information obtained as a result of this search was analyzed for its relevance to this project. The following descriptors were used in the search:

Electronic Test Technician
Job Skills
Employment qualifications
Entry workers
Adult basic education
Vocational education
Vocational training
Adult vocational training
Technical education
Trade and industrial education
Content area reading
Functional reading
Remedial reading
Literacy
Functional literacy
Occupational information
Pretechnology programs
Skilled workers
Skilled occupation
Basic skills
Employable skills
Communication skills
Remedial mathematics
Training (occupational)
Workers
Curriculum
Competency-based education
Task performance
Job analysis
Reading skills
Minimum competencies
Industrial training

Highlights of the ERIC search:

A review of the literature obtained through ERIC revealed some studies pertaining to basic skills and occupational task performance. Those which indicated a correlation between mathematics, reading, writing, listening, and speaking skills and occupational tasks were read carefully to determine whether a linkage between precise basic skills and ETT tasks had already been developed in other geographic areas.

Some attempts had, in fact, been made to link basic skills to occupational tasks. The following projects were found to be significant:

A rather large research project was developed in Prince Albert, Saskatchewan in 1975. The results, published in the Generic Skills Handbook of Occupational Information, appears to have been the first extensive attempt at linking basic skills to occupational tasks.

The California State Department of Education sponsored a 1977 project, Adult Competency Education (ACE) Kit: Basic Skills in Speaking, Math, and Reading for Employment, which includes research in more than 70 occupations.

The Instructional Materials Laboratory at Ohio State University has developed Task/Activity Analyses for many technical occupations which include some basic skills requirements.

A 1980 project, currently being field-tested in vocational and secondary educational institutions nationwide, was undertaken by the Cornell Institute for Occupational Education. The project is entitled Teaching Basic Skills Through Vocational Education.

A 1982 project, Universal Skills Survey developed by Prep, Incorporated and based on the Generic Skills research mentioned above, was particularly relevant to this study.

B. THE DACUM PROCESS

It was decided to modify the DACUM occupational analysis method to determine the duties and tasks of an ETT. After identification of the duties and tasks, the basic skills necessary to perform these tasks could be specified.

DACUM (Developing A Curriculum) is an occupational analysis process which was developed in the 1960's by the Canadian Department of Regional Economic Expansion and the General Learning Corporation of New York. The DACUM process requires a panel of expert workers and supervisors in the occupation under analysis to define the competencies and skills of that occupation.

The panel of experts is formulated according to the specialty areas within an occupation. Occupational experts are selected from those specialty areas with regard to the following characteristics:

- Three to five years of full-time experience in the occupation
- Currently employed full-time in it
- Oral communication skills
- Ability to work as a team member

Over a specified period of time (usually 1 to 3 days), the duties and tasks of the occupation under consideration are identified. The process is guided by a group facilitator, and results are written down by a recorder. The group members must reach consensus on each task before the facilitator instructs the recorder to record it.

C. THE DACUM PROCESSES USED IN THIS STUDY

Information from a previous Skills Center DACUM group provided a preliminary ETT occupational task list. That group had been held at the Skills Center from June 1 - June 3, 1982, and involved seven representatives from seven local electronics companies.

It was then necessary to find basic skills definitions (taxonomies) which industry representatives could use in performing the basic skills analysis of the ETT occupation. Basic skills taxonomies were selected from among the research studies found in the prior searches. The taxonomies chosen were from the project entitled Universal Skills Survey, developed by Prep Inc., 1982. The Prep taxonomies were adapted and edited for use in the project. They were then printed on large posters and placed on the walls of the room in which the group was to meet.

The second group of fourteen representatives from nine electronics companies met at the Skills Center on January 27, 1983. The purpose of the meeting was two-fold:

1) to review and update the ETT occupational analysis done by the June 1982 group;
2) to identify the mathematics, reading, writing, listening and speaking skills needed by ETT's to perform those occupational duties and tasks.

At the beginning of the group meeting the representatives decided to endorse the previous occupational analysis, with a single duty addition: "Identify Components and Markings." (See Occupational Analysis, p. 25 - Duty L).

Then the group facilitator introduced the basic skills on the lists. The five taxonomies were considered one by one. Each separate basic skill on the lists, along with examples of each skill, were thoroughly discussed. When the facilitator had assured herself that the group members understood each basic skill definition, the analysis was begun.

The group considered the occupational tasks one by one. The facilitator asked the group members to consider each basic skill carefully in relation to each occupational task. If the panelists agreed that a particular basic skill was involved in performing the task, the recorder made note on the data sheet. The facilitator pressed the panelists to be even more specific in citing materials read, or math done, or oral communications used. (See Section III for specific basic skills activities performed by ETT's).

During the basic skills identification process, it became evident that three electronic assemblers were present. The assemblers were asked to assist in the identification of the basic skills linked to the assembly tasks of an ETT, and were then excused from further group participation.

Skills Center counselors, Electronics instructors, and basic skills instructors observed the process and asked questions of the panel or made comments at various points in the process. The group session was also videotaped so that any ambiguities on the data sheets could later be clarified.

D. DATA ANALYSIS

Data from the data sheets were analyzed according to percentages, since percentages seemed to be the most useful unit of measure for the intended audience. The outcome of the analysis was used in formulating some of the review criteria for instructional assessments and resources.

E. SEARCHING FOR INSTRUCTIONAL RESOURCES

Instructional resources that integrate the basic skills of mathematics, reading, writing, listening and speaking with ETT occupational duties and tasks were sought. Since it was felt that not many vocational-specific materials would be available, it was decided to enlarge the search to include instructional resources that teach the

basic skills related to vocations in general. The search was conducted through three sources:

1. Commercial Publishers:

   The 1982 Publishers' Trade List is a roster of the commercial publishers within the United States. One section of the Trade List is a listing of only those publishers which deal in educational books and media. There were approximately six hundred and fifty publishers listed in this educational category. The list did not indicate type of educational materials the publishers produced. Therefore, a form letter was sent to those several hundred educational publishers, requesting a catalog if they offered instructional resources.

2. Educational Resources Information Center (ERIC):

   An ERIC search was conducted with the help of the Information Retrieval Services Division of the Utah State Office of Education. Abstracts of research materials were printed out. The ERIC abstracts were used to order resources for review.

3. The following publications were used to generate a list of one hundred names and addresses of research and curriculum development centers. The same form letter that was sent to commercial publishers was sent to these centers soliciting pertinent instructional materials. (See Appendix A-2 for a complete listing of these centers.)

   Basic Skills in Vocational Education, Cornell Institute for Occupational Education, Cornell University, Ithaca, NY.

   Everything You Wanted to Know About Resources for the Disadvantaged, Dept. of Applied Benavioral Science, University of California, Davis.

   The Vocational Curriculum Catalogue, Vocational Curriculum Management Center, Building 17, Airdustrial Park, Olympia, WA 98505.

   Vocational Curriculum Resources for Disadvantaged Students, A Guide to Print and Non-Print Instructional Materials, Vol. 1, Maryland Vocational Curriculum Research and Development Center, University of Maryland, College Park, MD 20742.

F. OBTAINING INSTRUCTIONAL RESOURCES

1. Commercial Publishers

A search through the catalogs of publishers that had responded to the form letter revealed thirty publishers who appeared to publish vocational-specific basic skills instructional materials or materials that teach the basic skills in a vocational-general context. (See Appendix A-1 for the publishers' addresses and phone numbers).

Examination copies were requested from these publishers. The reviews of those materials follow.

2. ERIC

Besides the general ERIC search done at the beginning of the project, a search was done specific to each basic skill. Material was ordered from ERIC Document Reproduction Service, P.O. Box 190, Arlington, VA 22210. The ERIC material was research in nature and not intended for classroom use. It was not reviewed as instructional material, but was included in the bibliography.

3. Resource Guides

A search through the catalogs of vocational research and curriculum centers revealed ten centers that appeared to have developed vocational-specific instructional materials or materials which teach the basic skills in a vocational-general context.

The materials were requested on loan from these centers.

G. REVIEWING INSTRUCTIONAL RESOURCES

The materials review criteria were compiled from three sources:

Everything You Wanted to Know About Resources for the Disadvantaged (Draft), Nemko and Dutton, Department of Applied Behavioral Sciences, University of California, Davis, 1982;

The Development of Instructional Materials: Study Guide, Module 8, American Institute for Research; U.S. Office of Education, 1976;

Information gathered through the DACUM group meeting held at the Skills Center on January 27, 1983.

The criteria were:

- Inclusion of targeted basic skills
- Appropriateness for secondary and post-secondary students
- Vocational-specific or vocational-general context
- Reading level (determined by Fry Readability Scale * or by publishers' stated reading levels)
- Vocabulary carefully introduced and defined
- Frequent review built into the materials
- Use of more than one learning modality
- Illustrations appealing, realistic, contemporary
- Inclusion of Teacher's guide, instructions, or answer key
- Text well constructed and durable
- Cost
- Avoids racial, cultural and sexual stereotypes

* Fry, Edward B., "Fry Readability Scale", Jamestown Publishers, P.O. Box 6743, Providence, RI 02940.

Information follows for all instructional materials reviewed which met most of the criteria.

H. BROADENING THE INSTRUCTIONAL RESOURCES SEARCH

The search for basic skills materials in the areas of listening and speaking netted so few vocational-specific or vocational-general materials that it was decided to widen the search to include a life skills and a classroom skills category. This added more resources to the review list, although there were still few.

I. SEARCHING FOR BASIC SKILLS ASSESSMENTS

1. ERIC Search:

An ERIC search was done with the same descriptors as for the instructional materials (see p. 12), with the terms "pre- and post assessment", "evaluation", "measurement" and "test" added.

Highlights of the ERIC Search:

A review of the assessments cited in the ERIC results revealed one vocational-specific assessment which included basic educational skills. Those which looked at all relevant to ETT basic skills were ordered. Descriptions of them follow in the assessment review section.

2. Commercial Sources:

Catalogs which the Skills Center Assessment Center had previously collected were reviewed for assessment possibilities. The Assessment Coordinator had already ordered some evaluations and these were reviewed.

The latest edition of The Eighth Mental Measurements Yearbook, (Vols. I and II), Oscar Krisen Buros, was used as a source for other assessments. Any evaluation instruments appropriate for adults and secondary students which had not already been collected were ordered.

The publication, Tests of Functional Adult Literacy: An Evaluation of Currently Available Instruments, Northwest Regional Laboratory, was also used as a guide in searching for relevant assessments.

3. Vocational Research and Curriculum Development Centers:

The same publications which provided names and addresses of research/curriculum development centers for instructional resources were used. A form letter soliciting pertinent basic skills evaluations was also sent to those centers.

J. REVIEWING ASSESSMENT RESOURCES

Subject matter experts in the basic skills reviewed all of the assessments which had been collected. In their review, they responded to the following specific considerations:

The match of the basic skills identified by the industry representatives with specific items on the assessments
Degree (if any) of vocational orientation of the items
Level of item difficulty

It became apparent that so few assessments were vocational-specific, that broader categories would need to be considered. Therefore, 'vocational-general', 'life skills', and 'classroom skills' categories were added to the search depending on the findings within a basic skills area.

The following general criteria were used in further reviewing of the assessments:

Date developed or published
Alternate forms
Scoring methods
Timed or untimed
Cost
Reporting format
Method of administration
Reliability and validity information (where available)

Section II

Summary Of Results: ETT Occupational Analysis and Comparative Basic Skills Analysis

(Section III contains more detailed basic skills information)

ETT OCCUPATIONAL ANALYSIS

The following duties and tasks were identified as necessary for an ETT by panels of expert workers from the Electronics industry - June, 1982 and January, 1983.

DUTY A: UNDERSTAND AND USE SAFETY PROCEDURES ACROSS ALL ASPECTS OF ELECTRONICS

DUTY B: UNDERSTAND BASIC ELECTRONICS

Tasks:
1. Learn and use electronic terminology
2. Understand basic electron theory
3. Learn and apply Ohm's law
4. Learn and demonstrate use of DC theory
5. Learn and demonstrate use of AC theory
6. Understand vacuum tube function
7. Understand and apply solid state devices
8. Understand and apply integrated solid state devices

DUTY C: BE FAMILIAR WITH BASIC TEST EQUIPMENT

Tasks:
1. Use a multimeter correctly
2. Use an oscilliscope correctly
3. Be familiar with as much other test equipment as possible

DUTY D: READ ELECTRONIC DRAWINGS

Tasks:
1. Identify symbols of devices on schematic drawings
2. Read and understand assembly drawings
3. Read and understand mechanical drawings

DUTY E: TROUBLESHOOT

Tasks:
1. Pay attention to detail
2. Apply troubleshooting procedures
3. Apply troubleshooting techniques
4. Follow a signal through a schematic drawing
5. Be patient/persistent

DUTY F: SOLDER ON PRINTED CIRCUIT BOARDS AND WIRING

Tasks:
1. Desolder and know how to recognize a bad solder joint
2. Desolder and remove electronic components
3. Install and resolder components
4. Repair damaged circuit boards
5. Use proper hard wire solder techniques
6. Remove solder flux and contaminants from PC boards

DUTY G: USE PROPER WIRING TECHNIQUES

Tasks:
1. Use wire-wrap techniques
2. Use crimp connections
3. Use harnessing techniques

DUTY H: USE ELECTRONIC INDUSTRY STANDARDS OF WORKMANSHIP

Tasks:
1. Use hand tools properly and safely
2. Use quality assurance and inspection techniques

DUTY I: UNDERSTAND AND APPLY DIGITAL LOGIC

Tasks:
1. Identify and understand logic elements
2. Be familiar with Boolean algebra
3. Use binary, octal, and hexadecimal numbering systems

DUTY J: BE FAMILIAR WITH BASIC MICRO PROCESSOR SYSTEMS

Tasks:
1. Understand a basic block diagram
2. Have a basic understanding of assembly language
3. Write and execute a simple program for manipulation of hardware

DUTY K: BE FAMILIAR WITH RF

Tasks:
1. Be familiar with oscillators and resonant circuits
2. Be familiar with the use of filters and coupling devices
3. Be familiar with transmission lines and antennas

DUTY L: IDENTIFY COMPONENTS AND MARKINGS *

Tasks:
1. Read color codes
2. Read and identify manufacturers' markings

* This duty was addded to the June, 1982 list by the January, 1983 group.

COMPARATIVE BASIC SKILLS ANALYSIS

After the review and updating of the first DACUM occupational analysis, the second group of Electronics representatives identified the mathematics, reading, writing, listening and speaking skills ETT's need in order to perform those duties and tasks identified in the analysis. Frequency of use for each type of basic skill identified was tabulated. Then a comparative (percentage) analysis of the basic skills was performed, as Fig. 1 indicates.

A PERCENTAGE COMPARISON OF
ETT BASIC SKILLS *

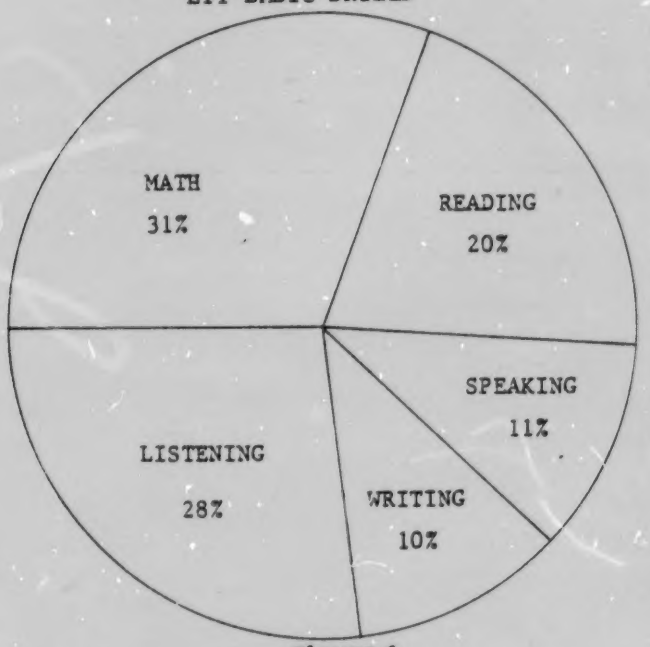

Figure 1

Of the five types of basic skills included in the survey (mathematics, reading, writing, listening, and speaking), it was found that mathematics skills are the most frequently used. Approximately one-third (31%) of all the basic skills needed by ETT's are math skills.

Listening is next important in terms of frequency, representing 28% of the total ETT basic skills. Reading skills account for 20% of the total basic skills, while speaking and writing skills are of almost equal necessity, at 11% for speaking and 10% for writing.

* Percentages were rounded off

Relative Importance of Particular Basic Skills

ETT MATH SKILLS

The most important math skills are: Reading assembly drawings, bar and line graphs, schematics, etc., Calculating whole numbers, fractions, decimals, per cents, and Drawing common angles, assembly drawings, schematics, etc.

The least important math skills are: Using algebra, Using trigonometry, and Using calculus.

ETT LISTENING SKILLS

The most important listening skills are: Listening to formal instructions, and Listening to job instructions.

The least important listening skill is Listening to customers' complaints and instructions.

ETT READING SKILLS

The most important reading skills are: Looking up information in reference books, and Looking up information on tables or charts outside of books.

The least important reading skill is Reading technical journals, trade magazines, professional journals, trade newspapers, etc.

ETT SPEAKING SKILLS

The most important speaking skill is Informing by giving information, directions or opinions.

The least important speaking skill is Participating in informal conversations with visitors or fellow employees.

ETT WRITING SKILLS

The most important writing skill is Writing notes or messages which convey information to another person. The second most important writing skill is Completing forms - either by using short phrases and/or numbers, or by writing sentences and paragraphs.

The least important writing skill is Writing formal reports.

Section III

Basic Mathematics, Listening, Reading, Speaking and Writing Skills* Used by ETT's

*Listed in order of relative frequency of use by ETT's

Mathematics

Mathematics Taxonomy

The mathematics taxonomy used in this study consists of the following catagories: *

1. CALCULATE using whole numbers, fractions, decimals, percents.
2. DETERMINE rate, proportions, roots of numbers, averages, money/cost, powers of numbers such as squares, cubes.
3. USE A CALCULATOR for basic arithmetic, quadratic problems, scientific notation, geometry, trigonometric formulas.
4. MEASURE weight, distance, volume, precise thickness using U.S. Customary or Metrics.
5. CONVERT MEASUREMENTS FROM ONE SYSTEM TO ANOTHER
6. ESTIMATE AREA, CAPACITY, VOLUME, COST, TIME OR DURATION (to determine how long a job will take); RESOURCES needed to do a job or project (such as material, equipment, labor, rate).
7. SOLVE SIMPLE WORD PROBLEMS
8. USE ALGEBRA TO SOLVE WORD PROBLEMS in situations where a formula must be devised to solve the problems.
9. SOLVE QUADRATIC PROBLEMS using quadratic equations.
10. USE SCIENTIFIC NOTATION
11. USE GEOMETRY dealing with points, lines, planes, and solids, and which requires a knowledge of theorems or propositions, hyperbolic or elliptic geometry.
12. USE BASIC OR ADVANCED STATISTICS to caluclate means, modes, ranges, standard deviations, probabilities, factor analysis, etc.
13. USE TRIGONOMETRIC FORMULAS to find unknown angles or lengths of sides of triangles.
14. READ ASSEMBLY DRAWINGS, BAR AND LINE GRAPHS, SCHEMATICS, etc.
15. DRAW common angles, figures, line and bar graphs, assembly drawings, schematics, etc.
16. USE CALCULUS TO DEAL WITH INTEGRALS

* Adapted from Universal Skills Survey, published by Prep Inc., Trenton, NJ 1982.

33

According to participants, eleven of the sixteen mathematics skills are used by an ETT, as percentages in Fig. 2 indicate.

ETT MATH SKILLS ANALYZED ACCORDING TO
PERCENTAGES OF EACH TYPE OF MATH REQUIRED *

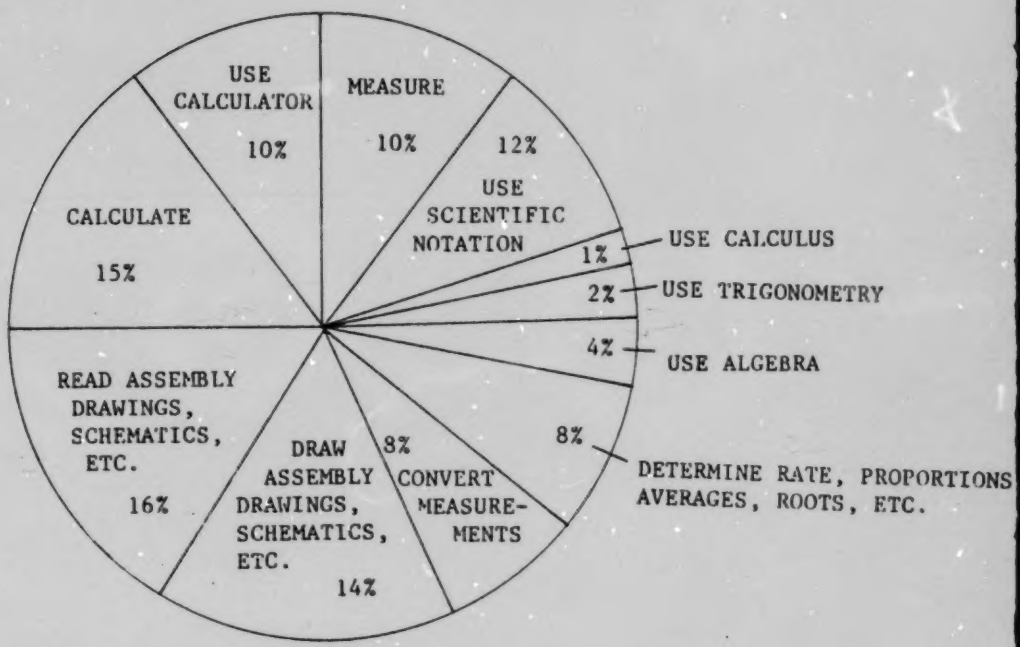

Figure 2

The most important math skills in terms of frequency are: READING assembly drawings, graphs, schematics (16%), CALCULATING whole numbers, fractions, decimals (15%), and DRAWING common angles, assembly drawings, schematics and graphs (14%).

USING A CALCULATOR, and MEASURING weight, distance, volume and thickness are equally necessary (each type comprises 10% of all math). Likewise, CONVERTING MEASUREMENTS FROM ONE SYSTEM TO ANOTHER, and DETERMINING RATES, PROPORTIONS AND AVERAGES each accounts for 8% of the required math skills.

The remaining skills for ETT's include Using algebra (4%), Using trigonometry (2%), and Using calculus (1%).

* Percentages were rounded off

Specific Mathematics Activities

(This list was also formulated by the industry participants, but does not necessarily comprise a complete one.)

ETT's use math skills to:

Read and draw schematics
Read and follow flow diagrams
Read assembly language
Read resistors
Read capacitors
Read callipers
Read micrometers
Recognize variations in manufacturers' markings
Perform electrical measurements with voltmeter
Perform electrical measurements with oscilloscope
Determine repair costs
Estimate the results of voltage and current levels to make settings on test equipment
Estimate the results of voltage and current levels to determine safe values for components

Listening

Listening Taxonomy

The listening taxonomy used in this study divides listening into eight specific categories:

1. LISTEN TO JOB INSTRUCTIONS from supervisors or other workers on what to do or how to do a job or project.

2. LISTEN TO FORMAL INSTRUCTIONS Participate in formal, instructional or motivational programs such as lectures, movies or audio-visual presentations.

3. LISTEN TO CUSTOMERS' COMPLAINTS AND INSTRUCTIONS Listen to customers to identify dissatisfactions, needs or instructions for a job or project.

4. LISTEN FOR ABNORMAL NOISES Listen, hear and react to any sounds which might indicate a problem with a machine, etc.

5. LISTEN CAREFULLY to ensure understanding of the main intent or thrust of what the speaker is saying; to identify whether what is said is based on opinions or facts.

6. OBSERVE CAREFULLY the speaker's use of body cues to emphasize what he or she is saying such as the uses of gestures, eye contact, facial expression or body posture.

7. LISTEN ACTIVELY by repeating what another has said in own words (paraphrasing), asking clarifying questions for points not understood, and using other techniques to ensure accurate understanding.

8. LISTEN SYMPATHETICALLY OR EMPATHETICALLY by identifying and dealing with the mood or personality of others to assist understanding and communication.

* Adapted from, Universal Skills Survey, published by Prep Inc., Trenton, NJ 1982

According to the respondents in this study, six of the eight listening categories in the taxonomy are used by entry-level workers, as percentages in Fig. 3 indicate.

ETT LISTENING SKILLS ANALYZED ACCORDING TO
PERCENTAGES OF EACH TYPE OF LISTENING REQUIRED *

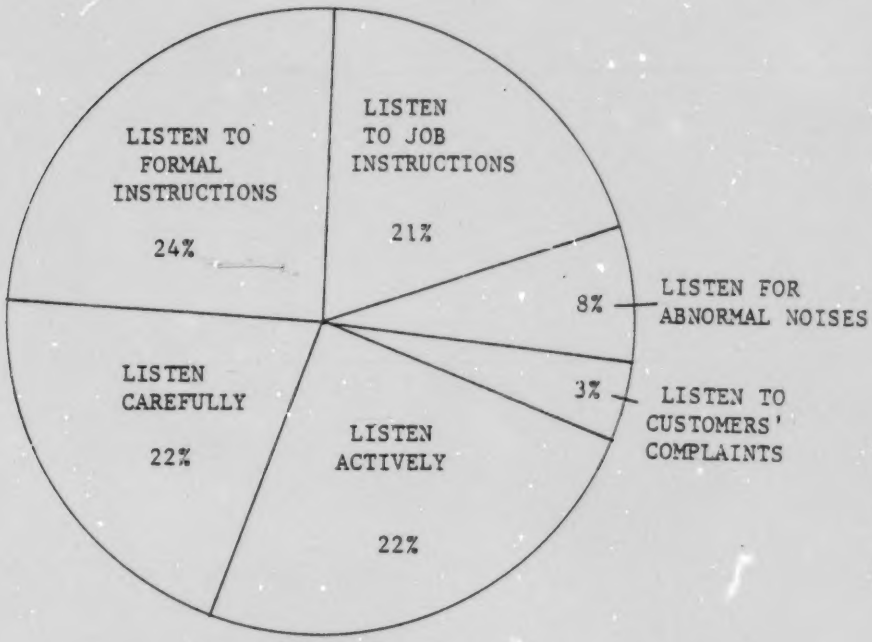

Figure 3

Nearly one-fourth (24%) of all listening required of ETT's consists of LISTENING TO FORMAL INSTRUCTIONS. LISTENING TO JOB INSTRUCTIONS from supervisor or other workers accounts for 21%.

LISTENING CAREFULLY to ensure understanding, and LISTENING ACTIVELY are equally necessary (each type comprises 22% of all listening for ETT's).

The remainder of the required listening includes LISTENING FOR ABNORMAL NOISES (8%), and LISTENING TO CUSTOMER COMPLAINTS AND INSTRUCTIONS (3%).

* Percentages were rounded off

Specific Listening Activities

(This list was also formulated by the industry participants, but does not necessarily comprise a complete one.)

ETT's listen to the following on the job:

Audio-visual presentations
Explanations of general assembly language codes
Customers' complaints or descriptions of problems
Noise produced by equipment which is usually silent
Abnormal noises associated with other test equipment

Reading

Reading Taxonomy

The reading taxonomy used in this study divides reading into nine categories: *

1. READ FORMS such as requisitions, vouchers, work orders, tax forms, other governmental forms, etc.

2. READ CORRESPONDENCE such as letters, memos, notes, etc.

3. LOOK UP INFORMATION ON TABLES OR CHARTS outside of books

4. LOOK UP INFORMATION IN REFERENCE BOOKS such as dictionaries, trade manuals, text books, etc.

5. READ TECHNICAL JOURNALS, trade magazines, professional journals, trade newspapers, etc.

6. USE CATALOGS Obtain information from trade, supply wholesale catalogs, etc. to determine prices, catalog numbers, etc.

7. USE THE WHITE OR YELLOW PAGES OF THE TELEPHONE BOOK in order to locate telephone numbers or street addresses

8. READ MAPS to locate streets, highways, etc.

9. EXAMINE LEGAL DOCUMENTS

* Adapted from Universal Skills Survey, published by Prep Inc., Trenton, NJ 1982.

According to participants, six of the nine types of reading skills from the reading taxonomy are used by ETT's on the job, as percentages in Fig. 4 indicate.

ETT READING SKILLS ANALYZED ACCORDING TO
PERCENTAGES OF EACH TYPE OF READING REQUIRED *

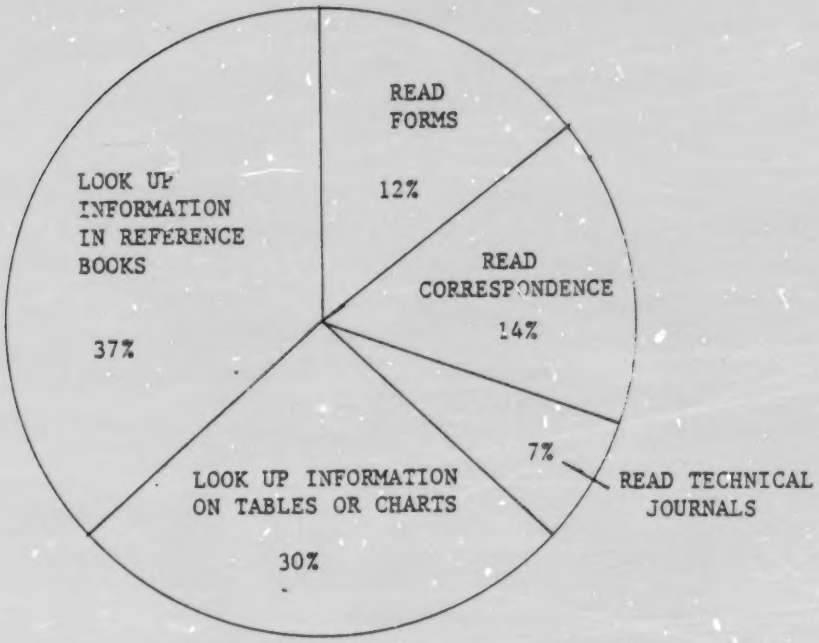

Figure 4

The majority of reading required in performing ETT tasks involves searching for information. LOOKING UP INFORMATION IN REFERENCE BOOKS such as repair manuals comprises 37%, and LOOKING UP INFORMATION ON TABLES OR CHARTS comprises 30%.

READING CORRESPONDENCE such as letters, memos, or notes comprises 14%. READING FORMS such as requisitions, vouchers or work orders makes up 12%, and READING TECHNICAL JOURNALS, trade magazines, professional journals, etc. accounts for the final 7%.

* Percentages were rounded off

Specific Reading Activities

(This list was also formulated by the industry participants, but does not necessarily comprise a complete one.)

ETT's read the following on the job:

Parts catalogs
Reference manuals and textbooks to understand and use electron theory, Ohm's law, AC and DC theories, vacuum tube functions, Boolean algebra and RF theory
Publications which specify workmanship standards
Logic diagrams (flow charts)
Customers' correspondence describing problems
Work order forms
Color Codes

Speaking

Speaking Taxonomy

The speaking taxonomy used in this study divides speaking into fourteen specific categories:

1. INFORM by giving information, directions or opinions.
2. PARTICIPATE IN TASK CONVERSATIONS by discussing what is to be done and how it is to be done.
3. PARTICIPATE IN PERSUASIVE CONVERSATIONS to influence others to do something or to adopt new methods.
4. PARTICIPATE IN INFORMAL CONVERSATIONS WITH VISITORS OR FELLOW EMPLOYEES which are casual conversations to occupy visitors' time or to maintain good public or employee relations.
5. PARTICIPATE IN NEGOTIATION CONVERSATIONS employing give-and-take offers and counteroffers.
6. PARTICIPATE IN GROUP MANAGEMENT DISCUSSIONS with or for management to identify new products, new processes or new methods to improve productivity.
7. CONDUCT SUPERVISORY CONVERSATIONS by informing workers of good or bad work performance or attitudes.
8. CONDUCT INTERVIEWING CONVERSATIONS by obtaining information from or about others through question and answer.
9. CONDUCT OR LEAD A MEETING
10. CONDUCT COUNSELING CONVERSATIONS by interviewing a person who has social, personal or financial concerns or who needs advice.
11. RESPOND APPROPRIATELY IN PROBLEM CONVERSATIONS TO A PERSON WHO IS IRRITATED OR DISSATISFIED
12. GIVE EXPLANATORY SPEECHES or talks which convey concepts, ideas, methods, or steps.
13. GIVE IMPROMPTU SPEECHES
14. GIVE PERSUASIVE SPEECHES or talks which are intended to influence others to adopt ideas or do something new.

* Adapted from Universal Skills Survey, published by Prep Inc., Trenton, NJ 1982.

According to the participants in the study, five of the fourteen types of speaking from the taxonomy are used by ETT's, as percentages in Fig. 5 indicate.

ETT SPEAKING SKILLS ANALYZED ACCORDING TO
PERCENTAGES OF EACH TYPE OF SPEAKING REQUIRED *

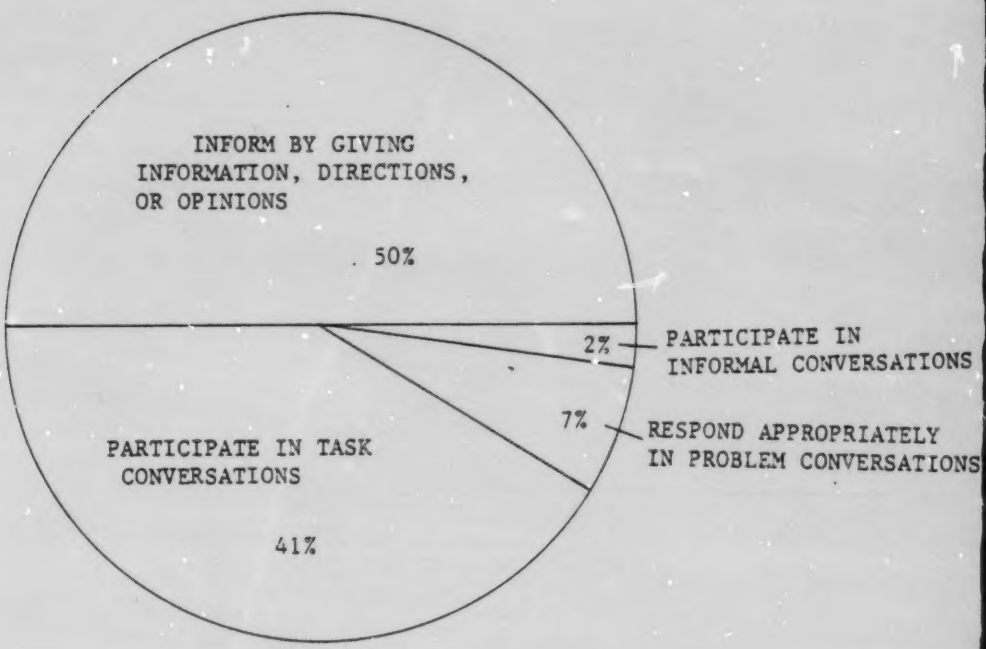

Figure 5

According to the participants, one-half (50%) of the speaking tasks required of ETT's consists of INFORMING by giving information, directions or opinions. Forty one percent involve PARTICIPATING IN TASK CONVERSATIONS by discussing what is to be done and how it is to be done.

RESPONDING APPROPRIATELY IN PROBLEM CONVERSATIONS to a person who is irritated or dissatisfied accounts for 7% of the required speaking skills. PARTICIPATING IN INFORMAL CONVERSATIONS WITH VISITORS OR FELLOW EMPLOYEES represents the remaining 3%.

* Percentages were rounded off

Specific Speaking Activities

(This list was also formulated by the industry participants, but does not necessarily comprise a complete one.)

ETT's apply speaking skills to:

Ask for directions or explanations from co-workers
Repeat instructions for clarification
Ask supervisor pertinent questions
Ask customers clarifying questions
Give pertinent information to customers
Handle dissatisfied customers (demonstrate good public relations skills)

Writing

Writing Taxonomy

The writing taxonomy used in this study consists of the following:

1. COMPLETE FORMS USING SHORT PHRASES AND/OR NUMBERS

2. COMPLETE FORMS USING SENTENCES AND/OR PARAGRAPHS

3. WRITE NOTES OR MESSAGES which convey information to another person

4. WRITE BUSINESS LETTERS OR MEMOS in a formal style which might go to an individual, another company or department, or to a governmental agency.

5. WRITE FORMAL REPORTS which describe a situation, an event or an inspection, or make recommendations regarding them.

6. WRITE PERSUASIVE SPEECHES or talks which are intended to influence others to adopt or do something.

* Adapted from Universal Skills Survey, published by Prep Inc., Trenton, NJ 1982.

According to the participants, four of the six types of writing categories from the taxonomy are required of ETT's, as the percentages in Fig. 6 indicate.

ETT WRITING SKILLS ANALYZED ACCORDING TO PERCENTAGES OF EACH TYPE OF WRITING REQUIRED *

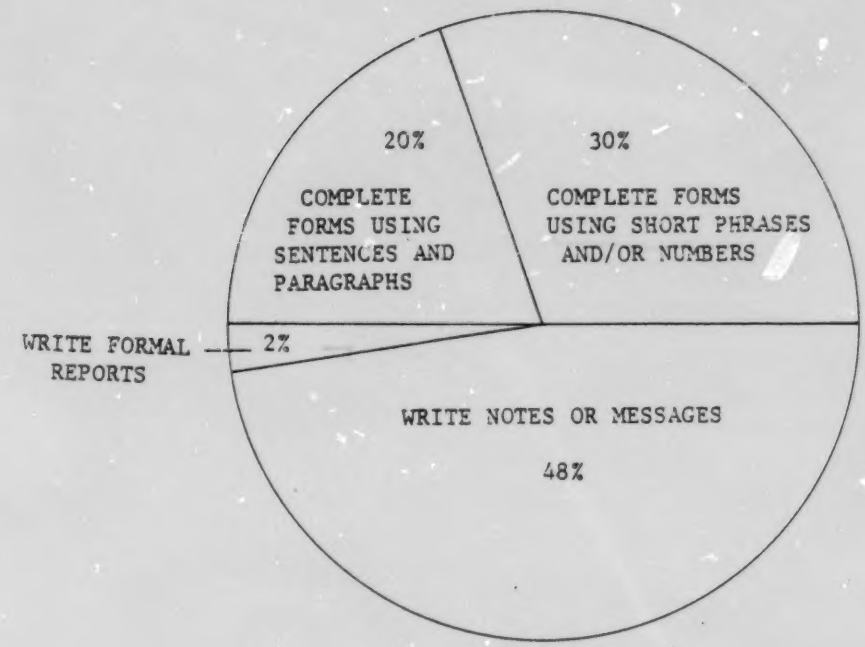

Figure 6

One-half of the writing skills involves COMPLETING FORMS - either by using short phrases and/or numbers (30%), or by writing sentences and/or paragraphs (20%).

According to the participants, the most frequently used writing skill involves WRITING NOTES OR MESSAGES which convey information to another person (48%).

The remaining 2% of the writing skills required are related to WRITING FORMAL REPORTS.

* Percentages were rounded off

Specific Writing Activities

(This list was also formulated by the industry participants, but does not necessarily comprise a complete one.)

ETT's apply writing skills to:

Make notes to themselves while reading reference materials
Document programs
Fill out work order forms
Fill out assembly forms
Fill out inspection reports
Fill out traveler sheets

Section IV
Review of Instructional Resources

Review of Instructional Resources

INTRODUCTION

Communication skills are interwoven and interdependent. It is sometimes difficult to classify instructional materials into only one category, (e.g., it is hard to say if a text is a reading or writing text when both skills are required of the student). In order to classify each text in this section according to a basic skill, it was necessary to consider the primary teaching objective of each text and not the skills required by the student to reach that teaching objective.

Mathematics texts are easier to classify, of course. However, reading grade level is not included in the reviews of all the math resources because not every math text includes word problems from which a level can be determined.

Vocational-Specific or Vocational-General
Basic Skills Instructional Resources

TABLE OF CONTENTS

Mathematics: Vocational-Specific (pp. 69 to 72)
BASIC MATHEMATICS FOR ELECTRICITY AND ELECTRONICS
BASIC MATHEMATICS FOR ELECTRONICS
MATHEMATICS: OUTLINE AND REVIEW PROBLEMS FOR BASIC ELECTRONICS
PRACTICAL PROBLEMS IN MATHEMATICS FOR ELECTRONICS TECHNICIANS

Mathematics: Vocational-General (pp. 75 to 86)
BASIC MATHEMATICS FOR THE VOCATIONAL STUDENT
COORDINATED VOCATIONAL EDUCATION AND TRAINING: MATH
MATH
MATH APPLIED TO CAREER HIGHLIGHTS (MATCH)
MATHEMATICS AT WORK: FRACTIONS
MATHEMATICS FOR TECHNICAL AND VOCATIONAL STUDENTS
MATHEMATICS FOR THE TRADES: A PROGRAMMED APPROACH
MEASURING DEVICES AND INSTRUMENTS
VOCATIONAL AND TECHNICAL MATH IN ACTION (text)
VOCATIONAL AND TECHNICAL MATH IN ACTION (transparencies)
VOCATIONAL RELATED MATH
WORKING WITH MATH

Listening: Vocational-General (pp. 89 to 90)
EFFECTIVE LISTENING: KEY TO YOUR SUCCESS (also speaking practice)
EFFECTIVE LISTENING: DEVELOPING YOUR EAR-Q (also speaking practice)

Reading: Vocational-General (pp. 93 to 96)
COORDINATED VOCATIONAL EDUCATION AND TRAINING (also writing practice)
DO YOU READ ME?
VOCATIONAL ENGLISH (also writing practice)
YOU AND YOUR WORK

Speaking: Vocational-General (pp. 99 to 100)
COMMUNICATING AT WORK (also writing practice)
THE BUSINESS OF ORAL COMMUNICATION: FUNDAMENTALS

Writing: Vocational-General (pp. 103 to 106)
ADULT WRITING AND READING EXPERIENCES (also reading, listening and speaking practice)
APPLIED PENMANSHIP
WRITING FOR THE WORLD OF WORK
IMPROVE YOUR WRITING FOR JOB SUCCESS

MATHEMATICS - VOCATIONAL-SPECIFIC RESOURCES

Mathematics - Vocational-Specific Resource

TEXT: Basic Mathematics for Electricity and Electronics
Bertrand B. Singer (1978)
McGraw-Hill Publishing Company
San Francisco, CA

STATED OBJECTIVES	Yes. The preface gives a good break down of the objective and how it is to be achieved.
READING LEVEL	12th grade
FREQUENT REVIEW	Not applicable
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not applicable
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Good
TEACHERS' GUIDE	Yes
CONSTRUCTION	Hard Bound
COST	$22.95
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Good presentation of rules with good examples and sample problems. Some solutions are given in a programmed approach and there are sample practice problems for each section.

Every chapter has a pre-test and a post-test and is well outlined as far as presentation of new material.

Mathematics - Vocational-Specific Resource

TEXT: Basic Mathematics for Electronics
Nelson M. Cooke
McGraw-Hill Publishing Company
Novato, CA

STATED OBJECTIVES	Yes
READING LEVEL	14th grade
FREQUENT REVIEW	Not applicable
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not applicable
USES MORE THAN ONE LEARNING MODALITY	Not applicable
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Good
TEACHERS' GUIDE	Not reported
CONSTRUCTION	Hard Bound
COST	$17.95
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Not applicable

COMMENTS:

Reviews some basic math and teaches math concepts in algebra, powers, roots, trigonometry, etc.

Mathematics - Vocational-Specific Resource

TEXT: Mathematics: Outline and Review Problems for Basic Electronics (1978)
Bernard Gros
McGraw-Hill Publishing Company
Novato, CA

STATED OBJECTIVES	Yes
READING LEVEL	Not applicable
FREQUENT REVIEW	Yes
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Yes
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	No - Answer key included in text
CONSTRUCTION	Paperback
COST	$8.95
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Covers decimal numbers and arithmetic, negative numbers, fractions, powers and roots, power of 10, algebra, methods of solving equations and trigonometry.

Mathematics - Vocational-Specific Resource

TEXT: Practical Problems in Mathematics for Electronic Technicians
Richard Sullivan (1982)
Delmar Publishing Company
Albany, NY

STATED OBJECTIVES	Preface indicates goals but doesn't state objectives in behavioral terms.
READING LEVEL	9th grade
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	No
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	Yes
CONSTRUCTION	Paperback
COST	$5.40
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Good consumable book; excellent information in appendix. Includes final tests for math as well as a reading diagnostic test.

MATHEMATICS - VOCATIONAL-GENERAL RESOURCES

Mathematics - Vocational-General Resource

TEXT: Basic Mathematics for the Vocational Student
Instructional Materials Laboratory
Ohio State University
Columbus, OH
1981

STATED OBJECTIVES	No
READING LEVEL	Not applicable
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	No
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	No
TEACHERS' GUIDE	No
CONSTRUCTION	Paperback, 81/2" x 11"
COST	$4.50
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Basic math and metrics, square roots, geometry, use of a protractor, and ratios.

Mathematics - Vocational-General Resource

TEXT: Coordinated Vocational Education and Training: Math
Spann, (1971)
State Department of Vocational Education
Stillwater, OK 74074

STATED OBJECTIVES	Yes
READING LEVEL	Not reported
FREQUENT REVIEW	Yes
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not reported
USES MORE THAN ONE LEARNING MODALITY	Transparencies available
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Few illustrations
TEACHERS' GUIDE	Yes
CONSTRUCTION	Pages to be placed in 3-hole looseleaf
COST	Not reported
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Not reported

COMMENTS:

Seven areas: whole numbers, measurement, geometry, consumer education, percent, fractions and decimals. Each area with one or more units of instruction. Each instructional unit includes behavioral objectives, student and teacher activities, information sheets, assignment sheets, visual aids and tests.

Mathematics - Vocational-General Resource

TEXT: Math
Caleb Crowell (1982)
Education Design, Inc.
47 W. 13 Street
New York, NY 10011

STATED OBJECTIVES	Not reported
READING LEVEL	6th grade
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	No
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	No
CONSTRUCTION	Paperback
COST	$3.95
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

The first two sections are "measuring".

Mathematics - Vocational-General Resource

TEXT: Math Applied To Career Highlights (MATCH)
Learning Achievement Corp. (1981)
McGraw-Hill Publishing Company

STATED OBJECTIVES	Yes
READING LEVEL	Not applicable
FREQUENT REVIEW	Yes
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not applicable
USES MORE THAN ONE LEARNING MODALITY	Yes
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Average
TEACHERS' GUIDE	Yes
CONSTRUCTION	Paperback
COST	Not reported
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Five workbooks relating basic math concepts to the real world of jobs and careers: number systems; addition and subtraction; multiplication and division; fractions and decimals; percent and measurement; geometry, ratio, proportion and reading graphs.

Pre- and post-tests provided. The program is supported by a complete set of microcomputer software. The software is designed for the instructor; its purpose is to generate and print out assignments, tests, drills, and individual study routines.

Mathematics - Vocational-General Resource

TEXT: Mathematics at Work: Fractions
Singer (1977)
McGraw-Hill Publishing Company
Highstown, NJ

STATED OBJECTIVES	No
READING LEVEL	Not applicable
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Yes
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	No (answer key)
CONSTRUCTION	Paperback
COST	Paperback manual $3.96 Answer key $1.56
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Possible racial stereotyping

COMMENTS:

Another workbook in the series is Decimals.

Mathematics - Vocational-General Resource

TEXT: Mathematics for Technical and Vocational Students
Boyce, Slade and Margolis
John Wiley & Sons Publishing Company
New York, NY

STATED OBJECTIVES	No
READING LEVEL	Not applicable
FREQUENT REVIEW	Not reported
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not applicable
USES MORE THAN ONE LEARNING MODALITY	Yes
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	No
TEACHERS' GUIDE	No - solutions manual
CONSTRUCTION	Hard Bound
COST	$19.95
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Not reported

COMMENTS:

Comes with student solutions booklet and study guide, $7.95. Covers use of calculator, metric system, algebra, geometry and trigonometry. Provides practice problems, worked-out examples, and self-tests related to different trades.

Mathematics - Vocational-General Resource

TEXT: Mathematics for the Trades: A Programmed Approach
Corman and Saunders (1981)
John Wiley & Sons Publishing Company

STATED OBJECTIVES	Yes - Each chapter has performance objectives and a diagnostic pre-test
READING LEVEL	Not applicable
FREQUENT REVIEW	Not reported
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not reported
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Two colors with cartoons
TEACHERS' GUIDE	Yes
CONSTRUCTION	Paperback
COST	$19.95
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Not reported

COMMENTS:

Written especially for students in the trades and technical areas. Complete coverage of arithmetic, algebra, geometry, and trigonometry, Metric and English units, deals with the use of calculators, problems at all levels of difficulty.

Mathematics - Vocational-General Resources

TEXT: Measuring Devices and Instruments
Justus
ESP, Inc.
Jonesboro, AR

STATED OBJECTIVES	Yes
READING LEVEL	5th grade
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not applicable
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	Yes
CONSTRUCTION	Paperback
COST	$4.00
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Set of 24 duplicating masters.

Mathematics - Vocational-General Resource

TEXT: Vocational and Tecnnical Math In Action
Hayden Book Company
Rochelle Park, NJ
1969

STATED OBJECTIVES	No
READING LEVEL	12
FREQUENT REVIEW	Problem set at end of book
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not applicable
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Photographs
TEACHERS' GUIDE	No
CONSTRUCTION	Paperback
COST	Not reported
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

May be used with transparencies mentioned on following page.

Mathematics - Vocational-General Resource

TEXT: Vocational and Technical Math in Action
United Transparencies, Inc.
Binghamton, NY
1979

STATED OBJECTIVES	Not applicable
READING LEVEL	Not applicable
FREQUENT REVIEW	Not applicable
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not applicable
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	Yes
CONSTRUCTION	50 transparencies
COST	$101.88
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Transparencies that could be used with vocational math texts.

Mathematics - Vocational-General Resource

TEXT: Vocational Related Math
Spann, (1972)
Oklahoma State Board of Vocational and Technical Education
Stillwater, OK

STATED OBJECTIVES	Yes
READING LEVEL	7th grade
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	No
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	Yes
CONSTRUCTION	For placement in looseleaf (3-hole punched)
COST	Student Manual $14.00 Teachers' Guide 17.00
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Includes measurement, whole numbers, fractions, decimals, percents, consumer education and geometry.

Mathematics - Vocational-General Resource

TEXT: Working with Math
Sushok and Shapiro (1976)
Vocational-Technical Curriculum Laboratory
Rutgers - The State University, Bldg. 4103
New Brunswick, NJ

STATED OBJECTIVES	Yes
READING LEVEL	4th grade
FREQUENT REVIEW	Yes
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Yes
USES MORE THAN ONE LEARNING MODALITY	Yes
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	No illustrations
TEACHERS' GUIDE	No
CONSTRUCTION	Separate job sheets
COST	Not reported
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Very basic level. Laboratory approach to teaching math to students in vocational programs who are non-readers. Includes student job sheets.

Covers using a conversion table, reading micrometers, fundamental math concepts.

LISTENING - VOCATIONAL-GENERAL RESOURCES

Listening - Vocational-General Resource

TEXT: Effective Listening: Developing Your Ear-Q
Communication Development, Inc.
25 Robb Farm Road
St. Paul, Minnesota 55110

STATED OBJECTIVES	Yes	
READING LEVEL	Not reported	
FREQUENT REVIEW	Yes	
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not reported	
USES MORE THAN ONE LEARNING MODALITY	Audio visual, Reading	
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes	
TEACHERS' GUIDE	Facilitator Manual	
CONSTRUCTION	Paperback study guide plus video tape	
COST	Complete Set	$2,450.00
	Mini Set	895.00
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes	

COMMENTS:

A set of seven videotapes - a comprehensive listening series; 3 audio tapes with eleven supplemental listening exercises; study guidebook for use with videotapes.

Cost of individual items:

Single video tapes	$400.00
3 audio tapes	95.00
Facilitator's Manual	19.95
Participant's Workbook	15.00

Listening - Vocational-General Resource

TEXT: Effective Listening: Key to Your Success
Stell, Barker and Watson (1983)
Addison-Wesley Publishing Company
Menlo Park, CA

STATED OBJECTIVES	Pre- and Post-Tests
READING LEVEL	11th grade
FREQUENT REVIEW	Some review
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	New words highlighted
USES MORE THAN ONE LEARNING MODALITY	To be used with videotape program
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	None in text
TEACHERS' GUIDE	No
CONSTRUCTION	Paperback, 8 1/2" x 11"
COST	Not reported
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Covers identification of personal listening strengths and weaknesses, dealing with distractions and emotions, note taking, message evaluation and response, etc.

READING - VOCATIONAL-GENERAL RESOURCES

Reading - Vocational-General Resource

TEXT: Coordinated Vocational Education and Training
(Vocationally Related English)
Sponn, (1972)
State Department of Vocational and Technical Education
Stillwater, OK

STATED OBJECTIVES	Yes
READING LEVEL	3rd grade
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	No
USES MORE THAN ONE LEARNING MODALITY	Reading, writing
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	No
TEACHERS' GUIDE	No
CONSTRUCTION	Paperback
COST	Available on loan
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Includes parts of speech, punctuation, application forms, safety rules, job interviews, and following directions. Poor print quality.

Reading - Vocational - General Resource

TEXT: Do You Read Me?
West Virginia Curriculum Lab
Charleston, WV
1981

STATED OBJECTIVES	No
READING LEVEL	Not reported
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	No
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Drawings
TEACHERS' GUIDE	Yes
CONSTRUCTION	Paperback
COST	$10.00
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

General vocational.

Reading - Vocational-General Resource

TEXT: Vocational English
Globe Book Company, Inc.
New York, NY
1975

STATED OBJECTIVES	Yes
READING LEVEL	7 - 8
FREQUENT REVIEW	Unit tests
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Yes
USES MORE THAN ONE LEARNING MODALITY	Also writing
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Drawings
TEACHERS' GUIDE	Yes
CONSTRUCTION	Paperback
COST	$4.00
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Includes: Using a Dictionary, Communication, Expressing Yourself, Getting Along with People, Vocabulary, Writing Reports and Letters.

Reading - Vocationally General Resource

TEXT: You and Your Work
Alpers and Afrow (1978)
Allyn & Bacon, Inc.
Boston, MA

STATED OBJECTIVES	No
READING LEVEL	8.5
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	No
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Black and white photographs
TEACHERS' GUIDE	No
CONSTRUCTION	Paperback
COST	$5.25
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

SPEAKING - VOCATIONAL-GENERAL RESOURCES

Speaking - Vocational-General Resource

TEXT: Communicating at Work
Williams and Eggland (1979)
South-Western Publishing Company

STATED OBJECTIVES	Yes
READING LEVEL	8
FREQUENT REVIEW	Yes
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Yes
USES MORE THAN ONE LEARNING MODALITY	Writing, Listening, Speaking
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Many, in color
TEACHERS' GUIDE	Yes
CONSTRUCTION	Paperback student manual plus audio-cassette
COST	$5.58
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Aimed at teaching communication competencies (oral and written) required on the job, especially by entry-level workers. Chapter 4, "Communicating with Customers" could be useful to an ETT.

Speaking - Vocational-General Resource

TEXT: The Business of Oral Communication: Fundamentals
(Module 1) Gwyn, Gwyn and Sander
South-Western Publishing Company
Cincinnati, OH 1980

STATED OBJECTIVES	No
READING LEVEL	5th grade
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	No
USES MORE THAN ONE LEARNING MODALITY	Listening, Speaking
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	No
CONSTRUCTION	Paperback study guide plus audio-cassettes
COST	Study Guide $ 2.43 Audio Cassettes $340.00
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Although not truly vocational, there are two sections on conversation at work. Unit 3 is Listening, and includes non-verbal signs.

WRITING - VOCATIONAL-GENERAL RESOURCES

Writing - Vocational-General Resource

TEXT: Adult Writing and Reading Experiences (AWARE I)
Series F (On the Job)
Morris & Birsner
EDL/McGraw Hill
New York, NY

STATED OBJECTIVES	Yes
READING LEVEL	2 - 3
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Yes (vocabulary not read by student without guidance until final exercise)
USES MORE THAN ONE LEARNING MODALITY	Reading, writing, listening, speaking
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes (real life forms)
TEACHERS' GUIDE	Yes
CONSTRUCTION	Paperback plus audio-cassette
COST	Not reported
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Student records and evaluates own progress.

Writing - Vocational-General Resource

TEXT: Applied Penmanship
Ferguson and Lyon (1976)
South-Western Publishing Company

STATED OBJECTIVES	No
READING LEVEL	14th grade
FREQUENT REVIEW	Post-tests
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Not applicable
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	No
CONSTRUCTION	Paperback
COST	$2.85
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Although the reading level is high, there isn't much actual reading. Includes writing numbers on ledger sheets, taking messages, writing letters, forms, orders, checks, and labels.

Writing - Vocational-General Resource

TEXT: Writing for the World of Work
Ellen Kaplan (1982)
Educational Design, Inc.
47 W. 13th Street
New York, NY 10011

STATED OBJECTIVES	Not reported
READING LEVEL	4th grade
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	Yes
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	No
CONSTRUCTION	Paperback
COST	$3.95
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

Includes writing used to get a job, start a job, and for ordering, shipping and receiving.

Writing - Vocational-General Resource

TEXT: Improve Your Writing for Job Success
Peterson Handwriting Company (1978)
2215 Commerce Street
Dallas, TX 75201

STATED OBJECTIVES	Not reported
READING LEVEL	6th grade
FREQUENT REVIEW	No
VOCABULARY CAREFULLY INTRODUCED AND DEFINED	No
USES MORE THAN ONE LEARNING MODALITY	No
ILLUSTRATIONS APPEALING, REALISTIC, CONTEMPORARY	Yes
TEACHERS' GUIDE	No
CONSTRUCTION	Paperback
COST	$3.25
AVOIDS RACIAL, CULTURAL, SEXUAL STEREOTYPES	Yes

COMMENTS:

This is a penmanship book that includes forms, only one of which is vocationally related (an employment application).

Section V

Review of Assessment Resources

Review of Assessment Resources

INTRODUCTION

The development of assessments usually comes after and lags considerably behind the development of instructional materials. The vocationally related basic skills area is no exception. Vocational-specific or vocational-general basic skills assessments are virtually non-existent. Fewer than ten assessments were found when the assessment search was limited to those two categories.

For this reason, the search for basic skills assessments at a secondary or post-secondary level was broadened to include a "Life Skills" category (i.e., adult living skills). There are many more of the life skill-type than vocational-type assessments. The content of these is often similar although the context is distinct.

In this study, when the basic skills included in the assessment dealt with basic skills determined by local industry to be important on the job, the assessment was included in the review section despite its "life skills" orientation as a "something is better than nothing" option. The listening and speaking assessment area posed a somewhat different problem.

Surveying the listening and speaking assessment resources which exist, it was evident that most of the work that had been done in listening and speaking assessment had been on a secondary and college level than vocationally or in terms of life skills. The school assessments were, of course, oriented to classroom oral communication skills. Telephone calls made to the International Listening Association and the Speech Communication Association revealed that no listening or speaking assessments which are vocational in orientation have thus far been developed, nor is there anything in the planning stages. Therefore, it became necessary to include in the listening and speaking reviews those assessments which are "classroom" in orientation. The skills assessed appear generalizable to vocational basic skills.

Another consideration is that the basic skills definitions (taxonomies) used in this study are functional and vocational in context, rather than academic. An academic approach usually involves the definition of sub-skills of a target skill (instructional objective). For example, this study indicates that a target skill for ETT's are: Completing forms using short phrases, sentences and paragraphs. Sub-skills of this (in academic terms) might be: punctuation, capitalization, neatness, grammar, diction, and composition.

In this study, industry defined the target basic skills for ETT's in vocationally oriented language. The assessment instruments in this section, however, were almost all developed with academic concepts and language. Therefore, the assessment counselor or instructor reviewing these assessments must work backwards from the targeted vocational basic skill specifying sub-skills. Then, appropriate matching and selection of non-vocational basic skills assessments can be carried out.

The problem of item context (subject matter) remains a problem in reviewing vocational-general, life skills or classroom skills basic skills assessments. These considerations and others will be discussed in the Conclusions and Recommendations section.

Assessment Resources

TABLE OF CONTENTS

Vocational-Specific (pp. 115 to 116)

ELECTRONICS TECHNOLOGY: SKILLS CHECK (measures Reading and Math)
DIAGNOSTIC READING SURVEY

Vocational-General (pp. 119 to 126)

BASIC SKILLS ASSESSMENT (measures Reading and Writing)
SURVEY OF BASIC SKILLS (measures Reading, Writing and Math)
INDUSTRIAL READING TEST
PERFORMANCE ASSESSMENT IN READING
TESTS OF EVERYDAY WRITING SKILLS

Life Skills (pp. 129 to 153)

COMPREHENSIVE TESTS OF BASIC SKILLS (measures Reading and Math)
ADULT PERFORMANCE LEVEL SURVEY (measures Reading and Math)
SRA ACHIEVEMENT SERIES (measures Reading and Math)
MINIMUM ESSENTIALS TEST (measures Reading, Writing and Math)
MINNESOTA READING ASSESSMENT
EVERYDAY SKILLS TEST (measures Reading)
CALIFORNIA ACHIEVEMENT TEST (measures Reading and Math)
SRA READING RECORD
THE STECK-VAUGHN PLACEMENT SURVEY FOR ADULTS BASIC EDUCATION
(measures Reading and Math)
THE MASSACHUSETTS BASIC SKILLS ASSESSMENT OF LISTENING AND SPEAKING
(measures Listening and Speaking)
STANDARD DIAGNOSTIC MATH TEST
GENERAL EDUCATIONAL PERFORMANCE INDEX (measures Math)
STANFORD ACHIEVEMENT TEST (measures Math)
TEST OF PERFORMANCE IN COMPUTATIONAL SKILLS (measures Math)
ASSESSMENT SKILLS IN COMPUTATION (measures Math)
TEST OF ADULT BASIC EDUCATION (measures Math)
ADULT BASIC LEARNING EXAMINATION (measures Math)

Classroom Skills (pp. 157 to 161)

BROWN-CARLSEN LISTENING COMPREHENSION TEST
ST. EDWARDS VIDEO TEST - PRE AND POST (measures Listening)
DOW LISTENING TEST
MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM (measures Listening)
COMMUNICATION COMPETENCY ASSESSMENT INSTRUMENT (measures Speaking)

VOCATIONAL-SPECIFIC ASSESSMENTS

TITLE: Electronics Technology: Skills Check

Reviewers' Test Item Analysis

SKILL(S) ITEMS APPEAR TO ASSESS
Reading comprehension, vocabulary, spelling, mathematics including basic computation, averages, fractions, decimals, ordering, percentages, conversions, algebra, scientific notation, square roots, geometry, word problems

ITEM ORIENTATION:	
Electronics	Yes
Vocational-General	No
Life Skills	No

LEVEL(S) OF ITEM DIFFICULTY: Low - High

NUMBER OF ITEMS

Reading Comprehension	16
Vocabulary	25
Spelling	10
Mathematics	40

General Information from Examination Copy

DEVELOPER NAME AND ADDRESS
Renton Vocational Technical Institute
Renton School District No. 403
3000 N.E. Fourth Street
Renton, WA 98055

ADMINISTRATION
Group or individual; explain general procedure aloud

DEVELOPER DESCRIPTION
One of thirteen pre-entry criterion referenced skills checks and subsequent diagnosis of areas in need of remediation: reading, spelling, math

MINUTES REQUIRED
Untimed

COST
Not reported

REPORTING FORMAT
Raw score

ALTERNATE FORMS
Not reported

RELIABILITY
Not available in Examiner Manual

PROJECT DATE(S)
1974 - 1976

SCORING
Hand with answer key

VALIDITY
Content validity to be determined by user

TITLE: Diagnostic Reading Survey
(end of text, Practical Problems in Mathematics for Electronics Technicians, which was reviewed in Section IV)

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
Electrical and electronics vocabulary, spelling, comprehension, including reference skills, using a table of contents, and index, finding the main idea, locating facts, following directions and reading charts and diagrams

ITEM ORIENTATION:

Electronics	Yes
Vocational-General	Some
Life Skills	No

LEVEL(S) OF ITEM DIFFICULTY: Moderate

NUMBER OF ITEMS: 45

General Information from Examination Copy

DEVELOPER NAME AND ADDRESS
Delmar Publishing Company
50 Wolf Road
Albany, NY 12205

PUBLISHER/DEVELOPER DESCRIPTION
Competency-based reading survey

COST
$7.50

ALTERNATE FORMS
No

COPYRIGHT DATE(S)
1978

SCORING
Hand with answer key

ADMINISTRATION
Group or individual; oral administration
General directions to be read aloud for each sub-test

MINUTES REQUIRED

Vocabulary	10
Spelling	5
Comprehension	45

REPORTING FORMAT
Raw score

RELIABILITY
See Instructor's Guide

VALIDITY
See Instructor's Guide

VOCATIONAL-GENERAL ASSESSMENTS

TITLE: Basic Skills Assessment

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
A lot of reading to find specific information, reading to draw conclusions, reading to relate new material to prior knowledge

ITEM ORIENTATION:

Electronics	No
Vocational-General	Some
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Moderate

NUMBER OF ITEMS: 65 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Educational Testing Service
Addison-Wesley Testing Service
2725 Sand Hill Road
Menlo Park, CA 94025

ADMINISTRATION
Individual or group; general directions read aloud for each of three subtests + writing sample

PUBLISHER DESCRIPTION
Performance in basic skills of reading, writing, math, and functional literacy

MINUTES REQUIRED
45 minutes for each subtest

COST

Test booklets (35)	$21.00
Answer sheets (100)	13.00
Scoring stencils	3.55

REPORTING FORMAT
Raw scores, standard scores cut score to be established by user

ALTERNATE FORMS
Forms A, B and C

RELIABILITY
Kuder-Richardson 20
.73 - .95

COPYRIGHT DATE(S)

1981

VALIDITY

Test based on information from schools, professional organizations, research, and relevant material from other testing programs (need technical manual for specifics)

SCORING
Machine, hand with stencil

TITLE: Survey of Basic Skills

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
A lot of reading in order to draw conclusions and reading to relate new material to prior knowledge, some reading to find specific information and a little reading in order to solve problems

ITEM ORIENTATION:

Electronics	No
Vocational-General	Items developed in reference to research which determined "generic" vocational skills
Life Skills	Some

LEVEL(S) OF ITEM DIFFICULTY: Moderate - high

NUMBER OF ITEMS: 18 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Cornell Institute for Occupational Education, New York State College, Cornell University, Ithaca, NY 14853

ADMINISTRATION
Group or individual; general instructions read aloud for each section

PUBLISHER DESCRIPTION
Competency in basic skills of math, language and reading

MINUTES REQUIRED
Untimed

COST
Booklet $1.35

REPORTING FORMAT
Scored by Cornell; total score, subscale scores, user norms can be calculated, diagnostic scores

ALTERNATE FORMS
No

COPYRIGHT DATE(S)
1981

RELIABILITY
Not available in Examiner Manual

SCORING
Machine

VALIDITY
Canadian generic basic skills research used in determining content

TITLE: Industrial Reading Test

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
Some reading to find specific information, some reading in order to draw conclusions and reading to relate new material to prior knowledge, a little critical reading

ITEM ORIENTATION:	
Electronics	No
Vocational-General	Yes
Life Skills	No
LEVEL(S) OF ITEM DIFFICULTY	High (Technical Vocabulary)
TOTAL NUMBER OF ITEMS	38

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
The Psychological Corporation
1001 Polk Street
San Francisco, CA 94109

ADMINISTRATION
Individual and group, general directions to be read aloud

PUBLISHER DESCRIPTION
Measure of reading ability developed for use in industry and vocational schools, ability to comprehend written technical materials

MINUTES REQUIRED
40 minutes

COST

Test booklets (25)	$10.00
Manual	2.85
Answer Sheet (50)	5.75
Answer Key	1.75

REPORTING FORMAT
Raw score, percentile for various groups including Skills Center and adult remedial students

ALTERNATE FORMS
Forms A and B (Form B only available to schools)

RELIABILITY
Alternate form and split-half reliability .75 - .92
Standard error of measurement .20 - 3.8

COPYRIGHT DATE(S)
1978

SCORING
Machine, hand scoring with key

VALIDITY
Content - based on training manuals students would encounter in their training

TITLE: Performance Assessment in Reading

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS

Some reading to find specific information, (including a referencing section), reading in order to draw conclusions and to relate new material to prior knowledge, some reading in order to solve problems, a little reading to follow directions and reading critically

ITEM ORIENTATION:

Electronics	No
Vocational-General	Some
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Moderately high

NUMBER OF ITEMS: 72 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
CTB/McGraw Hill
Del Monte Research Park
Monterey, CA 93940

ADMINISTRATION
Individual or group, administration

PUBLISHER DESCRIPTION
Identification of learners' needs in basic reading skills and instructional prescriptions referenced to those skills

MINUTES REQUIRED
Untimed

COST

Reusable test booklets (35)	$20.65
Answer sheets (25)	5.00

REPORTING FORMAT
User sets own cut scores

ALTERNATE FORMS
No

COPYRIGHT DATE(S)
Not reported

RELIABILITY
Not available in Examiner Manual

SCORING
Self-scoring answer sheet

VALIDITY
Not available in Examiner Manual

TITLE: Tests of Everyday Writing Skills (TEWS)

Reviewers' Test Item Analysis

WRITING SKILL(S) ITEMS APPEAR TO ASSESS
A lot of items on correct punctuation, some on correct spelling, some writing sentences

ITEM ORIENTATION:

Electronics	No
Vocational-General	A few
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Moderately High (high school)

TOTAL NUMBER OF ITEMS: 100

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
CTB/McGraw Hill
Del Monte Research Park
Monterey, CA 93940

PUBLISHER DESCRIPTION
Competency test in writing or composition skills that apply to everyday life situations. Objective section and writing sample.

COST
Not reported

ALTERNATE FORMS
Not presently available

COPYRIGHT DATE(S)
1978

SCORING
Machine, or hand scoring with stencil

ADMINISTRATION
Individual or group; general directions to be read aloud for each of three subtests

MINUTES REQUIRED
Untimed; examinees should be given an opportunity to attempt all items

REPORTING FORMAT
Develop own cut scores

RELIABILITY
No information in Examiner Manual

VALIDITY
No information in Examiner Manual

TITLE: Basic Skills Assessment

Reviewers' Test Item Analysis

WRITING SKILL(S) ITEMS APPEAR TO ASSESS
Conceptual representation of recording work on a work order, filling out forms, writing complaints

ITEM ORIENTATION:

Electronics	No
Vocational-General	Yes
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Moderate

NUMBER OF ITEMS: 75 + writing sample

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Educational Testing Service
Addison-Wesley Testing Service
2725 Sandhill Road
Menlo Park, CA 94025

PUBLISHER DESCRIPTION
Performance in basic skills of reading, writing, math, functional literacy; grades 7-12

COST

Test booklets (35)	$21.00
Answer sheets (100)	13.00
Scoring stencil	3.55

COPYRIGHT DATE(S)
1981

SCORING
Machine, hand scoring with stencil

ADMINISTRATION
Individual or group; general directions to be read aloud for each of three subtests + writing sample

MINUTES REQUIRED
45 for each sub-test

REPORTING FORMAT
Raw scores, standard scores (cut scores to be established by user)

ALTERNATE FORMS
Forms A, B, C

RELIABILITY
Kuder-Richardson 20
.73 - .95

VALIDITY
Test based on information from schools, professional organizations, research and relevant material from other testing programs (technical manual needed for specifics)

TITLE: Survey of Basic Skills: Language Arts

Reviewers' Test Item Analysis

WRITING SKILL(S) ITEMS APPEAR TO ASSESS
Some punctuation, some use of alphabetic ordering, a little indirect measure of sentence writing

ITEM ORIENTATION:	
Electronics	No
Vocational-General	Yes
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Medium to high

NUMBER OF ITEMS: 36

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Cornell Institute for Occupational Education, New York State College, Cornell University
Ithaca, NY 14853

PUBLISHER DESCRIPTION
Competency in basic skills of math, language, and diagnostic reading, for adults

COST
Booklet $1.35

ALTERNATE FORMS
No

COPYRIGHT DATE(S)
1981

SCORING
Machine

ADMINISTRATION
Group or individual; general directions to be read aloud for each sub-test

MINUTES REQUIRED
Untimed

REPORTING FORMAT
Scored by Cornell; total score, sub-scale scores, user norms can be calculated, diagnostic scores

RELIABILITY
Not available in Examiner Manual

VALIDITY
Canadian generic basic skills research used in determining content.

TITLE: Survey of Basic Skills: Math

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
Whole numbers, a little measurement, fractions, decimals, percentages, geometric formulas and algebra

ITEM ORIENTATION:

Electronics	No
Vocational-General	Items developed based on research which determined "generic" vocational math skills; no word problems
Life Skills	No

LEVEL(S) OF ITEM DIFFICULTY: Low - Moderate

NUMBER OF ITEMS: 60 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Cornell Institute for Occupational Education, New York State College, Cornell University
Ithaca, NY 14853

PUBLISHER DESCRIPTION
Competency in basic skills of math, language, and diagnostic reading, for adults

COST
Booklet $1.35

ALTERNATE FORMS
No

COPYRIGHT DATE(S)
1981

SCORING
Machine

ADMINISTRATION
Group or individual; general directions to be read aloud for each of eight sub-tests

MINUTES REQUIRED
Untimed

REPORTING FORMAT
Scored by Cornell; total score, sub-scale scores, user norms can be calculated, diagnostic scores

RELIABILITY
Split-half .97 for Math Test

VALIDITY
Complete domain of functional competencies covered in math (72 objectives)

LIFE SKILLS ASSESSMENTS

TITLE: Comprehensive Test of Basic Skills (CTBS)

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
Some reading to find specific information (including reference skills), reading to draw conclusions, reading to relate new material to prior knowledge

ITEM ORIENTATION:

Electronics	No
Vocational-General	Yes
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Low - High

NUMBER OF ITEMS: 110 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
CTB/McGraw Hill
10450 South Pioneer Blvd. #5
Santa Fe Springs, CA 90670

PUBLISHER DESCRIPTION
Norm-referenced, objective-based measure of basic skills achievement, criterion-referenced: reading, writing, language, math, reference skills

COST

Reusable Test Booklets (35)	$35.70
Answer Sheets (50)	10.50
Stencils	4.75

ALTERNATE FORMS
Forms U and V

COPYRIGHT DATE(S)
1981, 1982, 1983

SCORING
Machine, hand with stencils, or self-scoring

ADMINISTRATION
Group or individual; general directions to be read aloud for each of eight sub-tests

MINUTES REQUIRED

Reference	15
Reading Comprehension	40
Vocabulary	20

REPORTING FORMAT
Raw score, scaled score, percentile rank, stanine, grade equivalent

RELIABILITY
Not available in Examiner Manual

VALIDITY
Not available in Examiner Manual

TITLE: Adult Performance Level Survey (APL)

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
A lot of reading to relate new material to prior knowledge, reading in order to solve problems, referencing, some reading to find specific information and reading to draw conclusions

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Moderate

NUMBER OF ITEMS: 40 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
The American College Testing Program
26 Garden Center, Suite 3 C
Broomfield, CO 80020

PUBLISHER DESCRIPTION
Achievement and functional competency of adults, identification of facts and terms, reading, writing, computation, problem solving, community resources, occupational knowledge, consumer economics, health, government and law.

COST
In public domain

COPYRIGHT DATE(S)
1976 (after 3/15/81 in public domain)

SCORING
Hand scoring with answer key, self-scoring

ADMINISTRATION
Individual or group administration, general directions read aloud

MINUTES REQUIRED
Untimed

ALTERNATE FORMS
No

REPORTING FORMAT
Raw score, percentages

RELIABILITY
Kuder-Richardson 20 .52-.87
split half .53-.87

VALIDITY
Content validity based on University of Texas research

LIFE SKILLS ASSESSMENT ------ READING

TITLE: SRA Achievement Series

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
Some reading to find specific information, reading in order to draw conclusions and to relate new material to prior knowledge, a little reading in order to solve problems and reading critically, reference skills

ITEM ORIENTATION:

Electronics	No
Vocational-General	Some (in items of higher difficulty)
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Low to high

NUMBER OF ITEMS: 130 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Science Research Associates
155 N. Walker Drive
Chicago, IL 60606

PUBLISHER DESCRIPTION
Achievement in reading, math, language arts, reference materials, social studies and science

COST

Test booklets (25)	$28.00
Answer sheets (100)	20.95

COPYRIGHT DATE(S)
1978

SCORING
Machine, or hand scoring

ADMINISTRATION
Individual or group, general directions read aloud for each sub-test

MINUTES REQUIRED

Reading	50
Reference	25

REPORTING FORMAT
Not available in Examiner Manual

ALTERNATE FORMS
Forms 1 and 2

RELIABILITY
Not available in Examiner Manual

VALIDITY
Not available in Examiner Manual

TITLE: Minimum Essentials Test

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
Some reading to find specific information, to draw conclusions, and to solve problems, referencing, much reading to relate new material to prior knowledge

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	One section

LEVEL(S) OF ITEM DIFFICULTY: High

NUMBER OF ITEMS: 74 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Scott Foresman & Company
1900 East Lake Ave
Glenview, IL 60025

ADMINISTRATION
Individual or group; general directions read aloud for each sub-test

PUBLISHER DESCRIPTION
Test to measure minimum competency and basic skills in reading, mathematics, writing and life skills

MINUTES REQUIRED

Basic Skills	45
Life Skills	45
Writing (optional)	20

COST

Test booklets	(35)	$24.85
Answer sheets	(35)	7.95

REPORTING FORMAT
Raw score, percent correct; national percentile ranks reported for hand-scoring method

ALTERNATE FORMS
Forms A, B and C available

COPYRIGHT DATE(S)
1981

RELIABILITY
Not available in Examiner Manual

SCORING
Machine, or hand scoring with answer key

VALIDITY
Not available in Examiner Manual

TITLE: Minnesota Reading Assessment

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
A lot of reading to find specific information and to draw conclusions; a little reading to relate new material to prior knowledge

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Some

LEVEL(S) OF ITEM DIFFICULTY: High

NUMBER OF ITEMS: 90 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Twin Oak Publishing, Inc.
134 Mason Street
Rehobath, MA 02769

PUBLISHER DESCRIPTION
Competencies in reading relevant to school success with vocational and technical applicability

COST

Reusable test booklets (25)	$12.50
Stencil for hand scoring	3.50
Self-scoring answer sheet (50)	9.95
Hand-scoring answer sheet (50)	7.95

ALTERNATE FORMS
Forms A and B

COPYRIGHT DATE(S)
1980

SCORING
Self-scoring, or hand with stencil

ADMINISTRATION
Individual or group; general directions read aloud for each sub-test

MINUTES REQUIRED

Reading Rate & Retention	15
Vocabulary	10
Paragraph Comprehension	15

REPORTING FORMAT
Raw score, percentile score, approx. grade equivalent data also available

RELIABILITY
.90-.94 Kuder-Richardson 20
Cronbach's Horst Modified
No interform

VALIDITY
Criterion-related to
Nelson-Denny R .79
McGraw Hill Basic Skills
Reading Tests .72 and .82

TITLE: Everyday Skills Test

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
A lot of reading to find specific information, to relate new material to prior knowledge, referencing and graphs; some reading to draw conclusions, a little reading in order to solve problems, reading critically

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Moderate

NUMBER OF ITEMS: 95 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
CTB/McGraw Hill
Del Monte Research Park
Monterey, CA 93940

PUBLISHER DESCRIPTION
Criterion-referenced tests in the basic skills of reading and math required in everyday life:
norm-referenced tests use of graphics, reference materials, and math computation

COST

Reusable test booklets (35)	$12.25
Scoring stencils	3.25
Answer sheets (50)	5.00

ALTERNATE FORMS
No

COPYRIGHT DATE(S)
1969, 1973, 1975

SCORING
Machine, or hand with stencil

ADMINISTRATION
Individual or group, general directions read aloud for each sub-test

MINUTES REQUIRED
Part timed, part untimed
(Reading B - 30 min.)

REPORTING FORMAT
Set own criterion for mastery of criterion-referenced tests. Norm-referenced tests have grade equivalent conversions.

RELIABILITY
Not available in Examiner Manual

VALIDITY
Not available in Examiner Manual

TITLE: California Achievement Test (CAT)

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
Some reading to find specific information, including referencing (tables, dictionary, map, guide), some reading to draw conclusions, to relate new material to prior knowledge, and a little critical reading

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Some

LEVEL(S) OF ITEM DIFFICULTY: Low to high (locator test required)

NUMBER OF ITEMS: 95 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
CTB/McGraw Hill
Del Monte Research Park
Monterey, CA 93940

PUBLISHER DESCRIPTION
Norm-referenced and criterion-referenced

COST

Reusable test booklets (35)	$36.05
Self-scoring answer sheets (25)	8.00

ALTERNATE FORMS
Forms C and D

COPYRIGHT DATE(S)
1977, 1978 (revised from 1970)

SCORING
Machine, hand with answer key, or self-scoring

ADMINISTRATION
Individual or group, general directions read aloud for each sub-test

MINUTES REQUIRED

Reading	45
Reference	25

REPORTING FORMAT
Raw score, grade equivalent, scaled score, percentile rank, stanine

RELIABILITY
Not available in Examiner Manual

VALIDITY
Not available in Examiner Manual

TITLE: SRA Reading Record

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
Some reading to find specific information, in order to draw conclusions and to relate new material to prior knowledge, a little referencing (advertisement charts, graphs, indexes, etc.)

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Some

LEVEL(S) OF ITEM DIFFICULTY: Moderately high - High

NUMBER OF ITEMS: 106 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Science Research Associates
259 East Erie Street
Chicago, IL 60611

PUBLISHER DESCRIPTION
Basic skills in reading

COST

Reusable test booklets	(25)	$38.30
Answer sheets (100)		20.95

ALTERNATE FORMS
No

COPYRIGHT DATE(S)
1958

SCORING
Self-interpreting profile, percentile scores by grade (6-12)

ADMINISTRATION
Group administration; general directions read aloud for each sub-test

MINUTES REQUIRED
10 tests (2-5 min. each)
Total 31 minutes

REPORTING FORMAT
Not available in Examiner Manual

RELIABILITY
Not available in Examiner Manual

VALIDITY
Correlations with other reading and general ability tests are quite high (.63 - .84). (See Manual)

TITLE: The Steck-Vaughn Placement Survey for Adult Basic Education

Reviewers' Test Item Analysis

READING SKILL(S) ITEMS APPEAR TO ASSESS
Some reading to find specific information, and reading to relate new material to prior knowledge; much reading in order to draw conclusions; a little critical reading; some referencing

ITEM ORIENTATION:

Electronics	No
Vocational General	Some
Life Skills	Some

LEVEL(S) OF ITEM DIFFICULTY: Test has two levels
Very low - Moderately difficult

NUMBER OF ITEMS: 61 - Reading

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Steck-Vaughn Company
P.O. Box 2028
Austin, TX 78768

PUBLISHER DESCRIPTION
Achievement in vocabulary, reading language and math; two forms available for each level

COST

Reusable test booklets (25)	$66.00
Answer sheets (50)	6.00

ALTERNATE FORMS
Forms K & L = grades 0-4
Forms M & Q = grades 4-8

COPYRIGHT DATE(S)
1981

SCORING
Answer template

ADMINISTRATION
Individual or group administration

MINUTES REQUIRED
Untimed

REPORTING FORMAT
Raw score and grade equivalent (scores are prescriptive with regard to use of Steck-Vaughn individualized programs)

RELIABILITY
No information in Examiner Manual

VALIDITY
No information in Examiner Manual

TITLE: Minimum Essentials Test

Reviewers' Test Item Analysis

WRITING SKILL(S) ITEMS APPEAR TO ASSESS
Some punctuation and subjective measures of spelling, punctuation, and writing phrases, sentences neatly

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Moderate

TOTAL NUMBER OF ITEMS: 50 + writing sample

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Scott Foresman and Company
1900 East Lake Avenue
Glenview, IL 60025

PUBLISHER DESCRIPTION
Test to measure minimum competency and basic skills in reading, math, writing, and life skills; grades 8-12 and Adult

COST

Test booklets (35)	$24.85
Answer sheets (35)	7.95

ALTERNATE FORMS
Forms A, B, and C

COPYRIGHT DATE(S)
1981

SCORING
Machine, hand with answer key

ADMINISTRATION
Individual or group administration; general directions to be read aloud for each of three subtests

MINUTES REQUIRED

Basic Skills	45
Life Skills	45
Writing (optional)	20

REPORTING FORMAT
Raw score, percent correct, national percentile ranks reported for hand scored method

RELIABILITY
Not available in Examiner Manual

VALIDITY
Not available in Examiner Manual

TITLE: The Massachusetts Basic Skills Assessment of Listening and Speaking

Reviewers' Test Item Analysis

SKILL(S) ITEMS APPEAR TO ASSESS
Identifying and understanding the main idea, associating important details with the main idea, critical listening (understanding speaker's purpose), following directions, summarizing information and drawing conclusions.

ITEM ORIENTATION:	
Electronics	No
Vocational-General	No
Life Skills/Classroom Skills	Both
LEVEL(S) OF ITEM DIFFICULTY	Low to High (secondary level)
NUMBER OF ITEMS	50

General Information from Examination Copy

DEVELOPER NAME AND ADDRESS
Massachusetts Dept. of Education
Bureau of Research and Assessment
39 St. James Avenue
Boston, MA 02116

ADMINISTRATION
Group, multiple choice, written passages provided - for making of a tape

PUBLISHER/DEVELOPER DESCRIPTION
A general descriptive test of listening ability
(placement not diagnostic)

MINUTES REQUIRED
Not reported

COST
Not reported

REPORTING FORMAT
Raw score, percentage score

ALTERNATE FORMS
A-1 Form 3

COPYRIGHT DATE(S)
1980

RELIABILITY
Hoyt estimate of reliability (internal consistency) .76

SCORING
Answer key

VALIDITY
Content validity determined by a panel of "expert judges" in a blind review of the items

TITLE: The Massachusetts Basic Skills Assessment of Listening and Speaking

Reviewers' Test Item Analysis

SPEAKING SKILL(S) ITEMS APPEAR TO ASSESS
Delivery or transmission of message (volume, rate, articulation); organization or structure (sequence and relationship); content (quantity, relevance and adaptation), and language (grammar and choice or words)

ITEM ORIENTATION:	
Electronics	No
Vocational-General	No
Life Skills/Classroom Skills	Both

LEVEL(S) OF ITEM DIFFICULTY: Low to High (secondary level)

NUMBER OF ITEMS: Not reported

General Information from Examination Copy

DEVELOPER NAME AND ADDRESS
Massachusetts Dept. of Education
Bureau of Research and Assessment
39 St. James Avenue
Boston, MA 02116

ADMINISTRATION
Group, multiple choice, written passages provided for making of a tape

PUBLISHER/DEVELOPER DESCRIPTION
A general descriptive test of speaking ability
(placement not diagnostic)

MINUTES REQUIRED
Not reported

COST
None

REPORTING FORMAT
Raw score, percentage score

ALTERNATE FORMS
A-1 Form 3

COPYRIGHT DATE(S)
1980

RELIABILITY
Hoyt estimate of reliability (internal consistency) .76

SCORING
Answer key

VALIDITY
Content validity determined by a panel of "expert judges" in a blind review of the items

TITLE: Comprehensive Tests of Basic Skills

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
Some whole numbers, measurements, fractions, decimals; a lot of practical problems, weak on percentages, some algebra, ratio and geometry

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Low - High

NUMBER OF ITEMS: 98 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
CTB/McGraw Hill
Del Monte Research Park
Monterey, CA 93940

ADMINISTRATION
Individual or group; general directions to be read aloud for each of eight sections

PUBLISHER DESCRIPTION
Measures level of attainment in language, number and problem-solving skills for academic and everyday needs; seven levels range from K - 12.

MINUTES REQUIRED

Math Computation	40
Math Concepts	35

ALTERNATE FORMS
Forms S and T

COST

Test booklets (35)	24.85
Hand scoreable answer sheets (50)	6.50
Scoring stencil	3.25

REPORTING FORMAT
Grade equivalent, standard score, percentile, stanine; norms available

COPYRIGHT DATE(S)
1973

RELIABILITY
Not available in Examiner Manual

SCORING
Machine, hand with stencils, or self-scoring

VALIDITY
Not available in Examiner Manual

TITLE: Stanford Diagnostic Math Test

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
Measures computation, concepts, and applications in whole numbers, fractions, decimals, practical (word) problems, percentages, ratio, algebra, a lot of graphs, some geometry

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Low - High

NUMBER OF ITEMS: 120 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Harcourt Brace Janovich
Psychology Corporation
1001 Polk Street
San Francisco, CA 94109

PUBLISHER DESCRIPTION
Measures competence in basic concepts and skills in math; diagnostic; identifies strengths and weaknesses (number system and numeration, computation applications)

COST

Test booklets (35)	19.00
Key	1.75
Answer documents	4.75

ALTERNATE FORMS
Two

COPYRIGHT DATES
1976

SCORING
Machine, hand

ADMINISTRATION
Group or individual, general directions to be read aloud for each of three sub-tests

MINUTES REQUIRED

Number system	25
Computation	35
Application	30

REPORTING FORMAT
Raw score, percentile rank, stanine, grade equivalent, scaled scores

RELIABILITY
Kuder-Richardson 20
.88 - .97; standard error of measurement 2.3 - 4.5; alternate forms .81 - .95

VALIDITY
69 - .94 correlation with Standford Achievement Test in Math

TITLE: California Achievement Test

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
Tests both computation and application: whole numbers, a little measurement, fractions, a lot of decimals, percentages, practical (word) problems, some algebra, geometry and graphs

ITEM ORIENTATION:	
Electronics	No
Vocational-General	No
Life Skills	Yes
LEVEL(S) OF ITEM DIFFICULTY	Low - High
NUMBER OF ITEMS	85 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
CTB/McGraw Hill
Del Monte Research Park
Monterey, CA 93940

PUBLISHER DESCRIPTION
Norm-referenced and criterion-referenced

COST

Reusable test booklets (35)	$36.05
Self-scoring answer sheets (25)	8.00

ALTERNATE FORMS
Forms C and D

COPYRIGHT DATE(S)
1977, 1978, revised from 1970 edition

SCORING
Machine, hand with answer keys, or self-scoring

ADMINISTRATION
Individual or group; general directions read aloud for each subtest

MINUTES REQUIRED

Math	60

REPORTING FORMAT
Raw score, grade equivalent, scaled score, percentile rank, stanine

RELIABILITY
Not available in Examiner Manual

VALIDITY
Not available in Examiner Manual

TITLE: Minimum Essentials Test

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
Whole numbers, fractions, decimals, a few percentages, many practical (word) problems

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Low - Moderate

NUMBER OF ITEMS: 64 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Scott, Foresman & Company
1900 East Lake Ave.
Glenview, IL 60025

PUBLISHER DESCRIPTION
Test to measure minimum competency and basic skills in reading, mathematics, writing and life skills

COST

Test booklets (35)	$24.85
Answer sheets (35)	7.95

ALTERNATE FORMS
Forms A, B, and C available

COPYRIGHT DATE(S)
1981

SCORING
Machine, or hand scoring with answer key

ADMINISTRATION
Individual or group; general directions read aloud for each sub-test

MINUTES REQUIRED

Basic skills	45
Life skills	45
Writing (optional)	20

REPORTING FORMAT
Raw score, percent correct, national percentile ranks reported for hand-scoring method

RELIABILITY
Not available in Examiner Manual

VALIDITY
Not available in Examiner Manual

TITLE: General Educational Performance Index

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
Whole numbers, measurement, fractions, decimals, some percentages, a lot of algebra, a little geometry and graphs; all twenty-three problems are practical (word) problems

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: High

NUMBER OF ITEMS: 23 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Steck-Vaughn Company
P.O. Box 2028
Austin, TX 78768

ADMINISTRATION
Individual or group; general introduction read aloud

PUBLISHER DESCRIPTION
GED preparedness tests, indicates areas in need of attention prior to attempting GED. Writing, social studies, science, reading and math

MINUTES REQUIRED
Untimed

COST

Reusable tests (10)	$30.00
Answer sheets (50)	4.00

REPORTING FORMAT
Raw score converted to standard score which can be used to determine cut scores for each section

ALTERNATE FORMS
Forms AA and BB available

COPYRIGHT DATE(S)
1981

RELIABILITY
Alternate forms correlation coefficients = .67 - .82

SCORING
Hand using template

VALIDITY
Content: based on material used in GED training programs
Predictive: correlation coefficients between GEPI and GED ranged between .61 and .73

TITLE: The Adult Performance Level Survey (APL)

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
All 13 items are word problems dealing with whole numbers, fractions, decimals and percentages

ITEM ORIENTATION:	
Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Low - Moderate

NUMBER OF ITEMS: 13 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
The American College Testing Program
26 Garden Center, Suite 3 C
Broomfield, CO 80020

PUBLISHER DESCRIPTION
Achievement and functional competency of adults, identification or facts and terms, reading, writing, computation, problem-solving, community resources, occupational knowledge, consumer economics, health, government and law

COST
Not reported

ALTERNATE FORMS
No

COPYRIGHT DATE(S)
1976

SCORING
Not reported

ADMINISTRATION
Group or individual; general directions to be read aloud

MINUTES REQUIRED
Untimed

REPORTING FORMAT
Raw score, percentages

RELIABILITY
Kuder-Richardson - 20
.52 - .87;
Split-half .53 - .87

VALIDITY
Content validity based on University of Texas research

TITLE: Stanford Achievement Test

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
Measures computation, concepts and applications of whole numbers, fractions, decimals, percentages, algebra, graphs and geometry

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Low - High

NUMBER OF ITEMS: 120 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Harcourt Brace Jovanovich
Psychology Corporation
1001 Polk Street
San Francisco, CA 94109

ADMINISTRATION

PUBLISHER DESCRIPTION
Achievement test, measurement and assessment of learning at different levels

MINUTES REQUIRED

Math Concepts	20
Math Computation	35
Math Application	35

COST

Test Booklets (35)	$27.25
Key	2.85
Answer Documents (35)	5.00

REPORTING FORMAT
Raw scores, percentile ranks, stanines, grade equivalents, scaled scores

ALTERNATE FORMS
Forms A, B, C

COPYRIGHT DATE(S)
1972 Copyright (1923, 1929, 1940, 1953, 1964)

RELIABILITY
Spearman Brown .85-.96
Kuder-Richardson 20 .85-.96
SEM 2.6 - 4.0

SCORING
Machine, or hand scoring with stencil keys

VALIDITY
Content validity

TITLE: Test of Performance in Computational Skills (TOPICS)

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
Whole numbers, measurement, a few fractions, a lot of decimals; all 72 items are practical (word) problems with consumer education emphasis

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Low - Moderate

TOTAL NUMBER OF ITEMS: 72

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
CTB/McGraw Hill
Del Monte Research Park
Monterey, CA 93940

PUBLISHER DESCRIPTION
Proficiency in basic math skills needed in adult life; diagnostic and evaluative

COST

Test booklets (35)	24.50
Answer sheets (50)	5.50

ALTERNATE FORMS
Forms A, AE

COPYRIGHT DATE(S)
1978

SCORING
Machine, hand, self

ADMINISTRATION
Individual or group; general directions to be read aloud for each of two sections

MINUTES REQUIRED
About 50 minutes for each of two sections; allow enough time for every item to be attempted

REPORTING FORMAT
Class report, individual report, frequency distributions, cut score to be established by user

RELIABILITY
No information in Examiner Manual

VALIDITY
No information in Examiner Manual

TITLE: Assessment Skills in Computation

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
whole numbers, measurement, fractions, decimals, a little percentage, plus geometry; all 72 items are practical (word) problems

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Low - Moderate

TOTAL NUMBER OF ITEMS: 72

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
CTB/McGraw Hill
Del Monte Research Park
Monterey, CA 93940

ADMINISTRATION
Individual or group administration; general directions to be read aloud for each of two sections

PUBLISHER DESCRIPTION
Measures ability to handle computation problems typically encountered in everyday living, diagnostic, prescriptive; may be used in remedial program for adults

MINUTES REQUIRED
Untimed

COST

Reusable test booklets (35)	22.40
Answer sheets	5.75

REPORTING FORMAT
Cut score established by user

ALTERNATE FORMS
No

COPYRIGHT DATE(S)
Not reported

RELIABILITY
Not available in Examiner Manual

SCORING
Not reported

VALIDITY
Not available in Examiner Manual

TITLE: Test of Adult Basic Education (TABE)

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS

Tests computation, concepts and applications of whole numbers, and fractions; covers computation and concepts of measurement and decimals; tests concepts and applications of percentages; many practical (word) problems.

ITEM ORIENTATION:	
Electronics	No
Vocational-General	No
Life Skills	Yes
LEVEL(S) OF ITEM DIFFICULTY	Low - Moderately High
NUMBER OF ITEMS	108 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
CTB/McGraw-Hill
Del Monte Research Park
Monterey, CA 93940

ADMINISTRATION
Individual or group; general directions read aloud for each section

PUBLISHER DESCRIPTION
3 levels - Easy, Medium, Difficult
Achievement in reading, math, language
-adopted from 1970 edition of California Achievement Test

MINUTES REQUIRED
Math 65

COST

Test booklets (25)	$21.25
Answer sheets (50)	10.50

REPORTING FORMAT
Group record sheet, Student Profile sheet, analysis of learning difficulties, raw score, scaled score, and grade equivalent for each area (3) and each sub area (6)

ALTERNATE FORMS
Two parallel forms for each level

COPYRIGHT DATE(S)
1976 edition, revised from earlier edition

RELIABILITY
No information in Examiner Manual (technical manual in preparation)

SCORING
Hand scoring with answer key, overlay available

VALIDITY
No information in Examiner Manual

TITLE: SRA Achievement Series

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
Whole numbers, a little measurement, fractions, decimals, percentages, algebra, geometry and graphs; emphasis on practical (word) problems

ITEM ORIENTATION:	
Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY	Low - High
NUMBER OF ITEMS	100 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Science Research Associates
155 N. Walker Drive
Chicago, IL 60606

PUBLISHER DESCRIPTION
Achievement in reading, math, language arts, reference materials, social studies and science

COST

Test booklets (25)	$28.00
Answer sheets (100)	20.95

ALTERNATE FORMS
Forms 1 and 2

COPYRIGHT DATE(S)
1978

SCORING
Machine, hand

ADMINISTRATION
Individual or group, general directions read aloud for each sub-test

MINUTES REQUIRED

Math	90

REPORTING FORMAT
Not available in Examiner Manual

RELIABILITY
Not available in Examiner Manual

VALIDITY
Not available in Examiner Manual

TITLE: Steck-Vaughn Placement Survey for Adults Basic Education

Reviewers' Test Item Analysis

MATH SKILL(S)/CONCEPTS ITEMS APPEAR TO ASSESS
Whole numbers, fractions, decimals, percentages; most emphasis on practical (word) problems; a little geometry.

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Moderate

NUMBER OF ITEMS: 54 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Steck-Vaughn Company
P.O. Box 2028
Austin, TX 78768

ADMINISTRATION

PUBLISHER DESCRIPTION
Achievement in vocabulary, reading, language and math. Two forms available for each level.

MINUTES REQUIRED
Untimed

COST

Reusable test booklets (25)	$66.00
Answer sheets (50)	6.00

REPORTING FORMAT
Raw score and grade equivalent (scores are presecriptive with regard to use of Steck-Vaughn individualized programs)

ALTERNATE FORMS
Forms K & L = grades 0-4
Forms M & Q = grades 4-8

COPYRIGHT DATE(S)
1981

RELIABILITY
No information in Examiner Manual

SCORING
Answer template

VALIDITY
No information in Examiner Manual

TITLE: Adult Basic Learning Examination (ABLE)

Reviewers' Test Item Analysis

MATH SKILL(S) ITEMS APPEAR TO ASSESS
Whole numbers, a little measurement, fractions, decimals, percentages and many practical (word) problems, algebra and graphs

ITEM ORIENTATION:	
Electronics	No
Vocational-General	No
Life Skills	Yes

LEVEL(S) OF ITEM DIFFICULTY: Low - Moderate

NUMBER OF ITEMS: 50 - Math

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Harcourt Brace Janovich, Inc.
Psychology Corporation
1001 Polk Street
San Francisco, CA 94109

ADMINISTRATION
Group or individual; vocabulary and spelling are dictated; general directions to be read aloud for each sub-test

PUBLISHER DESCRIPTION
Measure of educational achievement among adults: vocabulary, reading, spelling, arithmetic computation and problem-solving, arithmetic total

MINUTES REQUIRED
Untimed

COST
Test Booklets (35) 34.50
(Three separate booklets required)

REPORTING FORMAT
Raw score, grade score

ALTERNATE FORMS
Forms A and B

COPYRIGHT DATE(S)
1967

RELIABILITY
Split Half .60 - .96

SCORING
Machine, or hand scoring with answer key

VALIDITY
Not reported in Examiner Manual

CLASSROOM SKILLS ASSESSMENTS

TITLE: Brown-Carlsen Listening Comprehension Test

Reviewers' Test Item Analysis

SKILL(S) ITEMS APPEAR TO ASSESS
Some listening carefully to ensure understanding of main intent or thrust of what speaker is saying; to identify whether what is said is based on opinion or fact.

ITEM ORIENTATION:	
Electronics	No
Vocational-General	A little
Life Skills/Classroom Skills	Classroom
LEVEL(S) OF ITEM DIFFICULTY	Moderate - High
NUMBER OF ITEMS	76

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Communications Development Inc.
25 Robb Farm Road
St. Paul, Minnesota 51510

ADMINISTRATION
Group or individual;
oral administration
General directions to be read aloud for each sub-test

PUBLISHER DESCRIPTION
Test of ability to comprehend spoken language

MINUTES REQUIRED
Untimed

COST

Manual	$ 8.00
Answer sheet (35)	10.00
Answer key	5.00

REPORTING FORMAT
Raw score, standard score, percentile rank

ALTERNATE FORMS
Forms AM and BM

COPYRIGHT DATE(S)
Not reported

RELIABILITY
Split Half .84 - .90
Alternate Forms .84 - .90

SCORING
Machine, or hand scoring with stencil

VALIDITY
Correlations with reading, I.Q. tests, and language tests

TITLE: St. Edwards Video Test (Pre and Post)

Reviewers' Test Item Analysis

LISTENING SKILL(S) ITEMS APPEAR TO ASSESS
Literal listening (to get information and remember details)

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills/Classroom Skills	Classroom skills

LEVEL(S) OF ITEM DIFFICULTY: Moderate

NUMBER OF ITEMS: 16

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
HBJ Media Systems Corporation
A subsidiary of Harcourt Brace Janovich
757 Third Avenue
New York, NY 10017

ADMINISTRATION
1/2" color video, or an audio tape; student requires pencil, answer sheet, and note-taking sheet

PUBLISHER DESCRIPTION
Note taking ability, ability to follow directions, short and intermediate term memory, and the ability to focus attention on a complex aural message (pre-test for listening course at St. Edward's University)

MINUTES REQUIRED
40

COST
Audio and video tape versions $75.00

REPORTING FORMAT
Norms on high schoool and college students available

ALTERNATE FORMS
Pre and post

COPYRIGHT DATE(S)
1982

RELIABILITY
Information not available in Examiner Manual

SCORING
Cut-off set at 88% correct of Part 1 (Listening to get information) and 67% correct of Part 2 (Remembering Details)

VALIDITY
Information not available in Examiner Manual

TITLE: Dow Listening Test

Reviewers' Test Item Analysis

SKILL(S) ITEMS APPEAR TO ASSESS
Listening comprehension; receipt, storing and analyzing information.

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills/Classroom Skills	Classroom skills

LEVEL(S) OF ITEM DIFFICULTY: High (high school seniors and college freshmen)

NUMBER OF ITEMS: 32

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS

Listening Laboratory
St. Edward's University
Austin, Texas

ADMINISTRATION
Group or individual;
audio tape oral instructions

PUBLISHER/DEVELOPER DESCRIPTION
Testing listening comprehension of high school seniors and college freshmen; tests the receipt, storing and analyzing aural information

MINUTES REQUIRED
Timed - but number of minutes not specified in review materials

COST
Not reported

REPORTING FORMAT
Not reported

ALTERNATE FORMS
No

RELIABILITY
Not available in Examiner Manual

COPYRIGHT DATE(S)
1950's - revised

VALIDITY
Not available in Examiner Manual

SCORING
Self-scored

VALIDITY
Not available in Examiner Manual

TITLE: Michigan Educational Assessment Program (MEAP)

Reviewers' Test Item Analysis

SKILL(S) ITEMS APPEAR TO ASSESS
Listening to the main intent, listening for details

ITEM ORIENTATION:

Electronics	No
Vocational-General	No
Life Skills/Classroom Skills	Classroom

LEVEL(S) OF ITEM DIFFICULTY: Moderate (10th grade)

NUMBER OF ITEMS: 13 listening passages (24 items)

General Information from Examination Copy

DEVELOPER NAME AND ADDRESS
Michigan Dept. of Education
Michigan Educational Assessment Program
Box 30008
Lansing, MI 48909

ADMINISTRATION
Audio tapes

PUBLISHER/DEVELOPER DESCRIPTION
Not reported

MINUTES REQUIRED
Untimed

COST
No cost

REPORTING FORMAT
Raw score

ALTERNATE FORMS
For Grades 4 and 7

COPYRIGHT DATE(S)
1979-80

RELIABILITY
Kuder Richardson 20 used, but no specifics cited in manual

SCORING
Cut score - 2 out of 3 items correct per objective (8),
Scoring keys

VALIDITY
Technical Manual available

TITLE: Communication Competency Assessment Instrument (CCAI)

Reviewers' Test Item Analysis

SKILL(S) ITEMS APPEAR TO ASSESS
Communication codes, oral message evaluation, basic speech communication skills, human relations, basic speech communication skills human relations

ITEM ORIENTATION:

Electronics	No
Vocational-General	(The 19 competencies could be applied to an occupational context according to the Speech Communication Association's 1978 Task Force.)
Life Skills/Classroom Skills	Classroom

LEVEL(S) OF ITEM DIFFICULTY: Low to High

NUMBER OF ITEMS: 57 (long form)
19 (short form)

General Information from Examination Copy

PUBLISHER NAME AND ADDRESS
Speech Communication Association
5105 Backlick Rd.
Suite E
Annandale, VA 22023

ADMINISTRATION
Videotape

PUBLISHER/DEVELOPER DESCRIPTION
Directly assesses college level speaking and listening skills

MINUTES REQUIRED
Not reported

COST
Not reported

REPORTING FORMAT
Not reported

ALTERNATE FORMS
Short and long

RELIABILITY
Reliability testing being carried out at University of Wisconsin - Parkside. Initial coefficient alphas, inter-rater reliability coefficients support validity of instruments.

COPYRIGHT DATE(s)
1980

SCORING
Performance rating scale

VALIDITY
Content validity established by subject matter experts

Section VI

Conclusions and Recommendations

Conclusions and Recommendations

BASIC SKILLS

Industry participants in this study indicated that 32% of all basic skills used on the job by ETT's involve mathematics. Listening accounts for 28% of basic skills used, reading for 19%, speaking for 11% and writing for 10%.

Mathematics for ETT's consists of two main types:

- Math fundamentals, i.e., whole numbers, fractions, decimals and percents
- Higher math skills, i.e., measurements, algebra, scientific notation, reading assembly drawings, working with angles and calculators, some trigonometry and a little calculus.

Note: Although the participants didn't stipulate that word problems were required, it is the subject matter expert's opinion that in fact the ability to solve word problems will be necessary for ETT's on the job.

Listening for ETT's consists of three types:

- Active, face-to-face (to boss, other workers, and occasionally to customers)
- Listening to equipment sounds
- Listening to formal instruction and presentations (audio-visual, movies, etc.)

Reading for ETT's can be divided into two basic categories:

- Short reference reading, i.e., charts and tables outside of books; letters and notes; and reference books
- Longer reading, i.e., technical and trade journals

Speaking for ETT's consists of three basic kinds:

- Giving information or opinions
- Discussing work and work procedures
- Responding appropriately to dissatisfied customers and socially to visitors and fellow employees

Writing for ETT's also consists of two types:

- Filling out forms
- Composing notes and messages; composing formal reports to a limited degree

INSTRUCTION

Analysis of the data collected for this project suggests that an instructor attempting to link basic skills subjects with vocational training for ETT's should stress mathematics, listening, reading, speaking and writing in that order.

Perhaps the phrase "basic math for Electronics" is a misnomer in that most math for ETT's begins where the basic math for some other trades leaves off. As we look at the hierarchy of math skills, the fundamentals of whole numbers, fractions, decimals and percents seem to be essential. Industry assumes competency in these basics. From that point begins the related math skills for electronics, i.e., measurements, algebra, scientific notation, reading assembly drawings, working with angles, using a calculator, and doing some trigonometry and calculus. Most Electronics Math texts stress these higher skills and it appears that related math for ETT's should be concentrated there.

Listening, a basic skill often overlooked, is seen as next in importance to mathematics for ETT's. Active and careful listening in a formal setting and on the shopfloor are skills which warrant attention during training. However, few instructional materials exist as yet -- especially to teach the shopfloor type.

Reading is perhaps overemphasized in training programs. The data show that reading is third in importance for ETT's and should focus mainly on reference reading.

Speaking, like listening, is a basic skill which may be neglected in the conventional classroom. A training program utilizing information from this study should include speaking as an area of instruction focusing on the speaking skills of opinion and information sharing, discussing a goal and procedures to reach that goal, and responding socially to co-workers and visitors, and appropriately to unhappy customers.

Writing, while perhaps easier to deal with than speaking or listening, is the least important basic skill for ETT's. As such, its importance in formal instruction can be minimized. Gearing the instruction as much as possible to actual samples of work orders and other forms used by ETT's would be an effective use of students' time. They will also need to learn to write notes, messages and a few reports.

ASSESSMENTS

Approximately fifty assessments were reviewed by the subject matter experts. Thirty of those assessments met minimal review criteria. Their item orientation (context) are as follows: two of the thirty are Vocational-Specific, five are Vocational-General, eighteen are Life Skills, and five are Classroom Skills.

The two Vocational-Specific resources are "Diagnostic Reading Survey" at the end of the text, Practical Problems in Mathematics for Electronics Technicians (see Instructional Resource Section), and the Washington State "Electronics Technology: Skills Check".

The "Diagnostic Reading Survey" is a vocational-specific instrument. As the name indicates, it is a diagnostic rather than a placement tool -- perhaps useful as a pre- and post-assessment within the Electronic training area. It includes electrical and electronic vocabulary, spelling, charts, tables, indices, diagrams, finding facts and information, following directions, and finding the main idea. No reliability or validity measures are cited; however, face validity is quite good.

The "Electronics Technology: Skills Check" is also a diagnostic rather than a placement tool. It appears to assess vocabulary, reading for comprehension as well as most of the mathematics ETT's need. No reliability or validity information was examined, but may be available from the test developers.

These two assessments together appear to assess most of the mathematics, reading and writing skills that ETT's need, although level of those skills as compared to industry expectations has not yet been defined.

ETT-specific listening, speaking and writing assessments do not appear to have been developed. The basic skills are evaluated to varying degrees by the vocational-general, life skills and classroom skills assessments.

Mathematics

In the area of mathematics there is less difficulty with differences in taxonomies and instructional contexts. Descriptions of math skills tend to be more standard whether the focus is vocational or academic.

Half of the thirty assessments reviewed evaluate math skills. Most of those fell into the Life Skills category. However, none of the Vocational-General or Life Skills math assessments contain the exact mix of the fundamental and higher math skills that ETT's need. None test for the use of a calculator.

The subject matter experts judged the "Stanford Math Achievement Test" and the "Comprehensive Test of Basic Skills" to be the most suited of those reviewed as a placement test for Electronics mathematics.

The Washington State, "Electronics Technology: Skills Check" comes the closest to diagnosing students' strengths and weaknesses in regard to the requisite ETT math skills. The word problems are quite vocational-specific and almost all of the math skills the Utah industry representatives pinpointed in this study are present. However, depending on the assessment philosophy of ths institution, this instrument's reliability and validity might need to be researched.

Listening

Traditionally, listening skills are defined as: literal listening (receipt of an oral message), interpretive listening (decoding the message) and evaluative listening (judging the importance of the message, assessing speaker bias, and deciding on a response).

Five assessments of listening were reviewed. Three of the five tested literal listening skills, two tested interpretive, and two critical skills.

Most of the listening tests were developed to assess classroom listening skills. This, however, is not as unrelated to ETT listening skills as it might seem: Almost one-fourth of the listening ETT's do is listening to formal instruction; and when analyzed carefully the skills of note-taking, following directions, listening to understand the main idea or to identify speaker bias are covered by the test and could be seen as sub-skills of listening skills industry designated for ETT's.

The skill of listening for abnormal equipment noises is not covered by the assessments.

Reading

Traditional definitions of reading skills are: perceptual (psychomotor), decoding (sight vocabulary, structural analysis and syllabification), and comprehension (literal, interpretive, critical and reading rate). These may be seen as sub-skills of the targeted skills: referencing, reading forms, correspondence, and tables and charts outside of books.

The "Diagnostic Reading Survey" mentioned before is the most content-related assessment of the targeted skills. However, as the title indicates, it is a diagnostic rather than a placement tool.

Speaking

Traditional academic definitions of speaking skills are often: pronunciation (articulating particular sounds); grammar (combining word forms or combining words into phrases or sentences according to prescribed rules, diction (choosing appropriate words and expressions according to their actual and implied meaning, and content (quantity, relevance and adaptation).

There were only two speaking assessments found. They fell into the Life Skills and Classroom Skills categories. These dealt mainly with pronunciation, vocabulary, asking questions and supplying facts. The "Massachusetts Basic Skills Assessment of Listening and Speaking" evaluates pronunciation (volume, rate and articulation), grammar, diction and content. The "Communication Competency Assessment Instrument" emphasizes communication codes, oral messages, and human relations. The human relations might link well with the target skill of responding appropriately to customers and fellow employees.

The assessment of speaking presents perhaps the greatest challenge of all the basic skills in that reliability, validity, and test bias are the hardest to deal with in this skill area. Since videotaping and observer ratings are usually the means of establishing those measures, it is a comparatively expensive area to assess.

Writing

Traditionally writing skills are defined as: mechanics (alphabetical ordering, neatness, spelling and punctuation), grammar and composition. These skills underlie the skills required of ETT's which are: writing notes and messages to themselves and others, completing forms with abbreviations, numbers, short phrases, sentences and paragraphs and limited writing of formal reports.

Only five of the assessments reviewed dealt with writing skills. Four of those five covered mechanics, all five dealt with phrase and sentence writing and none with composing paragraphs. Of the tests reviewed, few required actual writing samples and where writing samples were provided, no scoring criteria wre supplied with them. Actual writing skills are generally inferred from objective-type questions.

The "Basic Skills Assessment" was judged by the subject matter experts to be the closest measure of writing for ETT's which was not vocational-specific. The "Diagnostic Reading Survey" for Electronics included a section on spelling, but it was the only writing skill dealt with in it.

A consideration when selecting from the assessments in this study is whether the vocational institution has a related basic skills program which runs concurrently with the ETT vocational instruction. If there are no related basic skills classes in mathematics and reading, perhaps the two vocational-specific assessments would be the best indicators of whether a student had sufficient basic skills ability to successfully complete ETT training. However, if an institution did have related basic skills classses which a student enrolled in as they went through training, the vocational-general, life or classroom skills assessments might prove better placement instruments in that most of these give a range of item difficulty and generally have test norms established.

Since apparently no assessment meets all of the basic skills testing needs for ETT's, it may be necessary to select several assessments or sections of assessments in order to cover all the related basic skills in a placement test. Then test items may have to be created and validated to fill in the remaining gaps.

Developing assessments 'from scratch' which are criterion-referenced to an institution's ETT basic skills curricula is also a possibility, although a rather expensive and long-term one if item validation is done. Determining appropriate level of skill difficulty is another facet of basic skills assessment work for the future.

Creation of institutional or local norms on the test(s) selected or created is another option. This would validate them in a predictive sense. In vocational assessment centers, these data could be collected and the cut off scores for entry and exit could then be set with considerable predicitive accuracy. If test-taking were computerized, it would facilitate this process a great deal.

Of course, each institution should choose its basic skills assessment or assessments based on such other considerations such as population served, cost of test, scoring, alternate forms, administration, reliability, validity, etc.

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Appendices

Appendix A
Commercial Publishers and Research Institutes Addresses

APPENDIX A-1
COMMERCIAL PUBLISHERS

ALLYN & BACON
7 Wells Avenue
Newton, MA 04159
Phone: 617-964-5530
Toll Free in Utah: 1-800-526-4799

BARNELL LOFT, LTD.
958 Church Street
Baldwin, NY 11510
Phone: 516-868-6064

CAMBRIDGE
The Adult Education Company
888 Seventh Avenue
New York, NY 10106
Phone: 212-957-5300

CONTEMPORARY BOOKS, INC.
180 North Michigan Avenue
Chicago, IL 60601
Phone: 312-782-9181

CURRICULUM ASSOCIATES, INC.
5 Esquire Road
North Billerica, MA 01862
Phone: 800-225-0248

DELMAR PUBLISHING CO.
50 Wolf Road
Albany, NY 12205
Phone: 408-867-3191
Toll Free in Utah: 1-800-883-3350

EDL/MCGRAW-HILL
1221 Avenue of the Americas
New York, NY 10020
Phone: 212-997-1221

EDUCATIONAL ACTIVITIES, INC.
P.O. Box 392
Freeport, NY 11520
Phone: 800-645-3739

EDUCATIONAL DESIGN, INC.
47 West 13 Street
New York, NY 10011
Phone: 800-221-9372

EDUCATORS PUBLISHING SERVICE
75 Moulton Street, Dept. L
Cambridge, MA 02288

GLOBE BOOK COMPANY
50 West 23rd Street
New York, NY 10010
Phone: 212-741-0505

HAYDEN BOOK COMPANY
50 Essex Street
Rochelle Park, NJ 07662
Phone: 201-368-2202

LAKESHORE CURRICULUM MATERIALS CO.
2695 E. Dominguez Street
P.O. Box 6261
Carson, CA 90749
Phone: 800-421-5354

LEARNCO, INCORPORATED
128 High Street
Greenland, NH 03840
Phone: 603-778-0813

MCDOUGAL, LITTEL & CO.
P.O. Box 1667-LS
Evanston, IL 60204
Phone: 800-323-4345

PETERSON HANDWRITING COMPANY
2215 Commerce Street
Dallas, TX 75201
Phone: 214-651-0161

PRENTICE HALL MEDIA, INC.
150 White Plains Rd.
Tarrytown, NY 10591
Phone: 914-631-8300
Toll Free in Utah: 800-431-2266

SOUTH-WESTERN PUBLISHING CO.
855 California Avenue
Palo Alto, CA 94304
Phone: 415-857-0556
Toll Free in Utah: 1-800-227-8429

TEACHING AIDS, INC.
P.O. Box 1798
Costa Mesa, CA 92626
Phone: 714-548-9321

ZANER-BLOSER
2500 West Fifth Avenue
Columbus, OH 43216
Phone: 614-486-0221

APPENDIX A-2

CURRICULUM DEVELOPMENT & RESEARCH CENTERS

AMERICAN ASSOCIATION FOR VOCATIONAL INSTRUCTIONAL MATERIALS (AAVIM)
Engineering Center, University of Georgia
Athens, GA 30602
Phone: 404-542-2586

APPALACHIA EDUCATIONAL LABORATORY, INC. (AEL)
P.O. Box 1348
Charleston, WV 25325
Phone: 304-344-8371

CEMREL, INC.
2130 59th Street
St. Louis, MO 63139
Phone: 314-781-2900 or 314-781-1975 (nightline)

CENTER FOR EDUCATIONAL POLICY AND MANAGEMENT (CEPM)
College of Education, University of Oregon
Eugene, OR 97401
Phone: 503-686-5173

CENTER FOR SOCIAL ORGANIZATION OF SCHOOLS (CSOS)
The Johns Hopkins University
3505 North Charles Street
Baltimore, MD 21218
Phone: 301-338-7625

CENTER FOR THE STUDY OF EVALUATION (CSE)
UCLA Graduate School of Education
405 Hilgard Avenue
Los Angeles, CA 90024
Phone: 213-825-4711

CURRICULUM AND INSTRUCTIONAL MATERIALS CENTER
1500 West Seventh Avenue
Stillwater, OK 74074
Phone: 405-377-2000

CURRICULUM PUBLICATIONS CLEARINGHOUSE
Western Illinois University
76B Horrabin Hall
Macomb, IL 61455
Phone: 309-298-1917

EASTERN CURRICULUM COORDINATION CENTER
East Central Network/Illinois Vocational Curriculum Center
Sangamon State University, Building E-22
Springfield, IL 62708
Phone: 217-786-6375

FAR WEST LABORATORY FOR EDUCATIONAL RESEARCH AND DEVELOPMENT (FWL)
1855 Folsom Street
San Francisco, CA 94103
Phone: 415-565-3000

INSTITUTE FOR RESEARCH ON EDUCATIONAL FINANCE AND GOVERNANCE (IFG)
Stanford University
Stanford, CA 94305
Phone: 415-497-0791

INSTRUCTIONAL MATERIALS LABORATORY
The Ohio State University
1885 Neil Avenue, Room 112
Columbus, OH 43210
Phone: 614-422- 5001

LEARNING RESEARCH AND DEVELOPMENT CENTER (LRDC)
University of Pittsburgh
3939 O'Hara Street
Pittsburgh, PA 15260
Phone: 412-624-4831

MID-AMERICA VOCATIONAL CURRICULUM CONSORTIUM (MAVCC)
1500 West Seventh Avenue
Stillwater, OK 74074
Phone: 1-800-654-3988

MID-CONTINENT REGIONAL EDUCATIONAL LABORATORY (McREL)
7302 Pennsylvania Avenue
Kansas City, MO 64114
Phone: 816-361-7700

MIDWEST CURRICULUM COORDINATION CENTER
State Department of Vocational and Technical Education
1500 West Seventh Avenue
Stillwater, OK 74074
Phone: 405-377-2000

NATIONAL CENTER FOR HIGHER EDUCATION MANAGEMENT SYSTEMS (NCHEMS)
P.O. Drawer P
Boulder, CO 80302
Phone: 303-447-1980

NATIONAL CENTER FOR RESEARCH IN VOCATIONAL EDUCATION (NCRVE)
Ohio State University
1960 Kenny Road
Columbus, OH 43210
Phone: 614-486-3655

NORTHWEST REGION EDUCATIONAL LABORATORY (NWREL)
710 S.W. Second Avenue
Portland, OR 97204
Phone: 503-248-6802

NORTHWESTERN CURRICULUM COORDINATION CENTER
Commission for Vocational Education
Airdustrial Park, Building 17
Olympia, WA 98504
Phone: 206-753-0879

RESEARCH AND DEVELOPMENT CENTER FOR TEACHER EDUCATION (RDCTE)
University of Texas at Austin
Education Annex 3.203
Austin, TX 78712
Phone: 512- 471-1343

RESEARCH FOR BETTER SCHOOLS, INC. (RBS)
444 Third Street
Philadelphia, PA 19123
Phone: 215-574-9300

SOUTHEAST CURRICULUM COORDINATION CENTER
Mississippi State University
Research and Curriculum Unit, Drawer DX
Mississippi, MS 39762
Phone: 601-325-2510

SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY (SWDL)
211 East 7th Street
Austin, TX 78701
Phone: 512-476-6861

SOUTHWEST REGIONAL LABORATORY (SWRL)
4665 Lampson Avenue
Los Alamitos, CA 90720
Phone: 213-598-7661

VOCATIONAL RESOURCE CENTER
200 Old Matawan Road
Old Bridge, NJ 08857
Phone: 201-390-1191

VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES (V-TECS)
Southern Association of Colleges and Schools
795 Peachtree Street, N.E.
Atlanta, GA 30365
Phone: 404-875-8011

VOICE
721 Capitol Mall
Sacramento, CA 95814
Phone: 916-445-0401

WEST VIRGINIA VOCATIONAL CURRICULUM LABORATORY
Cedar Lakes Conference
Ripley, WV
Phone: 304-348-3688

WESTERN CURRICULUM COORDINATION CENTER
University of Hawaii
2444 Dole Street
Honolulu, HI 96822
Phone: 808-948-7834

WISCONSIN RESEARCH AND DEVELOPMENT CENTER FOR INDIVIDUALIZED SCHOOLING
1024 West Johnson Street
Madison, WI 53706
Phone: 608-263-4200

Appendix B
Basic Skills Linked To ETT Tasks

APPENDIX B

Basic Skills Linked to ETT Tasks:

During a DACUM group meeting held at the Skills Center June 1-3, 1982, a chart of the duties and tasks of an ETT was developed. At a second DACUM meeting held January 27, 1983, participants added a duty area (Duty L: Identify Components and Markings), and identified the basic skills of mathematics, reading, listening, writing and speaking needed to perform each occupational task. The chart contains twelve duties, broken down into forty-one specific tasks.

In the following list, each duty is identified. Within each duty, the tasks needed to perform the duty are enumerated. Finally, the specific basic skills of mathematics, reading, writing, listening and speaking required to perform the tasks are presented.

DUTY A: UNDERSTAND AND USE SAFETY PROCEDURES ACROSS ALL ASPECTS OF ELECTRONICS

Listening	Listen to job instructions Listen to formal instructions Listen for abnormal noises Listen carefully Listen actively
Speaking	Inform Participate in task conversations
Reading	Look up information on tables and charts Look up information in reference books Read technical journals
Writing	Write notes and messages
Math	None

DUTY B: UNDERSTAND BASIC ELECTRONICS

Task 1 - Learn and use electronic terminology

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform Participate in task conversations
Reading	Read forms Look up information on tables or charts Look up information in reference books Read technical journals
Writing	None
Math	Calculate Use a calculator Use scientific notation Read assembly drawings Draw common angles

Task 2 - Understand basic electron theory

Listening	Listen to formal instructions
Speaking	None

Reading	Look up information in reference books
Writing	None
Math	None

Task 3 - Learn and apply OHM's Law

Listening	Listen to formal instructions Listen carefully Listen actively
Speaking	Participate in task conversations
Reading	Look up information on tables or charts Look up information in reference books
Writing	None
Math	Calculate Determine rate, etc. Use a calculator Measure Use Algebra Read assembly drawings Draw common angles

Task 4 - Learn and demonstrate use of DC theory

Listening	Listen to formal instructions Listen carefully Listen actively
Speaking	Inform
Reading	Look up information on tables or charts Look up information in reference books
Writing	Write notes or messages
Math	Calculate Determine rate, etc. Use a calculator Measure Use Algebra Read assembly drawings Draw common angles

Task 5 - Learn and demonstrate use of AC theory

Listening	Listen to formal instructions Listen carefully Listen actively

Speaking	Inform
Reading	Look up information on tables or charts Look up information in reference books
Writing	Write notes or messages
Math	Calculate Determine rate, etc. Use a calculator Measure Use Algebra Use scientific notation Use Trigonometry Read assembly drawings Draw common angles

Task 6 -Understand vacuum tube function

Listening	Listen to formal instructions Listen carefully Listen actively
Speaking	None
Reading	Look up information in reference books
Writing	None
Math	None

Task 7 - Understand and apply solid state devices

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform Participate in task conversations
Reading	Look up information on tables or charts Look up information in reference books Read technical journals
Writing	Write notes or messages
Math	Calculate Determine rate, etc. Use a calculator

Use Algebra
Use scientific notations
Use Trigonometry
Read assembly drawings
Draw common angles

Task 8 - Understand and apply integrated solid state devices

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform
Reading	Look up information on tables or charts Look up information in reference books Read technical journals
Writing	Write notes or messages
Math	Calculate Determine rate, etc. Use a calculator Use Algebra Use scientific notations Use Trigonometry Read assembly drawings Draw common angles

DUTY C: BE FAMILIAR WITH BASIC TEST EQUIPMENT

Task 1 - Use a mulitmeter correctly

Listening	Listen to job instructions Listen to formal instructions Listen for abnormal noises Listen carefully Listen actively
Speaking	Participate in task conversations
Reading	Look up information in reference books
Writing	Write notes or messages
Math	Calculate Measure Use scientific notation Read assembly drawings Draw common angles

Task 2 - Use an oscilliscope correctly

Listening	Listen to job instructions Listen to formal instructions Listen for abnormal noises Listen carefully Listen actively
Speaking	Participate in task conversations
Reading	Look up information in reference books
Writing	Write notes or messages
Math	Calculate Measure Use scientific notation Read assembly drawings Draw common angles

Task 3 - Be familiar with as much other test equipment as possible

Listening	Listen to job instructions Listen to formal instructions Listen for abnormal noises Listen carefully Listen actively
Speaking	Inform
Reading	Look up information in reference books
Writing	Write notes or messages
Math	Calculate Measure Use scientific notation Read assembly drawings Draw common angles

DUTY D: READ ELECTRONIC DRAWINGS

Task 1 - Identify symbols of devices on schematic drawings

Listening	Listen to job instructions Listen to formal instructions
Speaking	Participate in task conversations

Reading	Reading correspondence Look up information on tables or charts Look up information in reference books
Writing	None
Math	Read assembly drawings Draw common angles

Task 2 - Read and understand assembly drawings

Listening	Listen to job instructions Listen to formal instructions
Speaking	Participate in task conversations
Reading	Reading correspondence Look up information on tables or charts Look up information in reference books
Writing	None
Math	Calculate Determine rate, etc. Use a calculator Measure Convert measurements Use scientific notation

Task 3 - Read and understand mechanical drawings

Listening	Listen to job instructions Listen to formal instructions
Speaking	Participate in task conversations
Reading	Reading correspondence Look up information on tables or charts Look up information in reference books
Writing	None
Math	Calculate Determine rate, etc. Use a calculator Measure Convert measurements Use scientific notation

DUTY E: TROUBLESHOOT

Task 1 - Pay attention to detail

Task 1 is not a basic skill that can be taught. However, the ETT will be exposed to details in reading.

Task 2 - Apply troubleshooting procedures

Listening	Listen to customers' complaints and instructions
	Listen for abnormal noises
	Listen carefully
	Listen actively
Speaking	Inform
	Respond appropriately in problem conversations to a person who is irritated or dissatisfied
Reading	Read forms
	Read correspondence
	Look up information on tables or charts
	Look up information in reference books
Writing	Complete forms using short phrases and/or numbers
	Complete forms using sentences and/or paragraphs
	Write notes or messages
Math	Calculate
	Determine rate, etc.
	Use a calculator
	Use scientific notation
	Read assembly drawings

Task 3 - Apply troubleshooting techniques

Listening	Listen to customers' complaints and instructions
	Listen for abnormal noises
	Listen carefully
	Listen actively
Speaking	Inform
	Respond appropriately in problem conversations to a person who is irritated or dissatisfied
Reading	Read forms
	Read correspondence
	Look up information on tables or charts
	Look up information in reference books
Writing	Complete forms using short phrases and/or numbers
	Complete forms using sentences and/or paragraphs
	Write notes or messages

Math	Calculate Determine rate, etc. Use a calculator Use scientific notation Read assembly drawings

Task 4 - Follow a signal through a schematic drawing

Listening	Listen to customers' complaints and instructions Listen for abnormal noises Listen carefully Listen actively
Speaking	Inform Respond appropriately in problem conversations to a person who is irritated or dissatisfied
Reading	Read forms Read correspondence Look up information on tables or charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Complete forms using sentences and/or paragraphs Write notes or messages
Math	Calculate Determine rate, etc. Use a calculator Use scientific notation Read assembly drawings

Task 5 - Be patient and persistent

Task 1 and 5 are covered in task 2 through 4. Attention, patience, and persistence are more closely defined as work habits, rather than basic skills.

DUTY F: SOLDER ON PRINTED CIRCUIT BOARDS AND WIRING

Task 1 - Desolder and know how to recognize a bad solder joint

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform by giving information, directions or opinions Participate in task conversations

Reading	Read forms (work order) Read correspondence Look up information on tables or charts Look up information in reference books (workmanship standards)
Writing	Complete forms using short phrases and/or numbers Complete forms using sentences and/or paragraphs Write notes or messages
Math	None

Task 2 - Desolder and remove electronic components

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform by giving information, directions or opinions Participate in task conversations Ask pertinent questions
Reading	Read forms Read correspondence Look up information on tables or charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Complete forms using sentences and/or paragraphs Write notes or messages
Math	None

Task 3 - Install and resolder components

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively

Task 3 - (Cont'd)

Speaking	Inform by giving information, directions or opinions Participate in task conversations Ask pertinent questions
Reading	Read forms Read correspondence Look up information on tables or charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Complete forms using sentences and/or paragraphs Write notes or messages
Math	Calculate using whole numbers, fractions, decimals percents Measure weight, distance, volume, thickness, etc. - (U.S. Customary and/or Metric) Use scientific notation Read assembly drawings, bar and line graphs, schematics, etc. Draw common angles, figures, graphs, assembly drawings, schematics, etc. Read resistors, capacitors, color codes (especially hard wire)

Task 4 - Repair damaged circuit boards

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform by giving information, directions or opinions Participate in task conversations Ask pertinent questions
Reading	Read forms Read correspondence Look up information on tables or charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Complete forms using sentences and/or paragraphs Write notes or messages
Math	Calculate using whole numbers, fractions, decimals percents Measure weight, distance, volume, thickness, etc. - (U.S. Customary and/or Metric) Use scientific notation Read assembly drawings, bar and line graphs, schematics, etc. Draw common angles, figures, graphs, assembly drawings, schematics, etc. Read resistors, capacitors, color codes (especially hard wire)

Task 5 - Use proper hard wire solder techniques

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform by giving information, directions or opinions Participate in task conversations Ask pertinent questions
Reading	Read forms Read correspondence Look up information on tables or charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Complete forms using sentences and/or paragraphs Write notes or messages
Math	Calculate using whole numbers, fractions, decimals percents Measure weight, distance, volume, thickness, etc. - (U.S. Customary and/or Metric) Read assembly drawings, bar and line graphs, schematics, etc. Draw common angles, figures, graphs, assembly drawings, schematics, etc.

Task 6 - Remove solder flux and contaminants from PC boards

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform by giving information, directions or opinions Participate in task conversations Ask pertinent questions
Reading	Read forms Read correspondence Look up information on tables or charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Complete forms using sentences and/or paragraphs Write notes or messages
Math	None

DUTY G: USE PROPER WIRING TECHNIQUES

Task 1 - Use wire-wrap techniques

Listening	Listen to job instructions Listen to formal instructions Listen for abnormal noises
Speaking	Inform by giving information, directions or opinions Participate in task conversations Ask pertinent questions
Reading	Read correspondence Look up information on tables or charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Write notes or messages
Math	Calculate using whole numbers, fractions, decimals percents Measure weight, distance, volume, thickness, etc. - (U.S. Customary and/or Metric) Convert measurements from one system to another Read assembly drawings, bar and line graphs, schematics, etc. Draw common angles, figures, graphs, assembly drawings, schematics, etc.

Task 2 - Use crimp connections

Listening	Listen to job instructions Listen to formal instructions Listen for abnormal noises
Speaking	Inform by giving information, directions or opinions Participate in task conversations Ask pertinent questions
Reading	Read correspondence Look up information on tables or charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Write notes or messages
Math	Calculate using whole numbers, fractions, decimals percents Measure weight, distance, volume, thickness, etc. - (U.S. Customary and/or Metric) Convert measurements from one system to another Read assembly drawings, bar and line graphs, schematics, etc. Draw common angles, figures, graphs, assembly drawings, schematics, etc.

Task 3 -Use harnessing techniques

Listening	Listen to job instructions Listen to formal instructions Listen for abnormal noises
Speaking	Inform by giving information, directions or opinions Participate in task conversations Ask pertinent questions
Reading	Read forms Read correspondence Look up information on tables or charts
Writing	Complete forms using short phrases and/or numbers Write notes or messages
Math	Calculate using whole numbers, fractions, decimals percents Measure weight, distance, volume, thickness, etc. - (U.S. Customary and/or Metric) Convert measurements from one system to another Read assembly drawings, bar and line graphs, schematics, etc. Draw common angles, figures, graphs, assembly drawings, schematics, etc.

DUTY H: USE ELECTRONIC INDUSTRY STANDARDS OF WORKMANSHIP

Task 1 - Use hand tools properly and safely

Listening	Listen to job instructions Listen to formal instructions Listen to customers' complaints and instructions Listen carefully Listen actively
Speaking	Inform by giving information, directions or opinions Participate in task conversations Ask pertinent questions
Reading	Look up information in reference books Read technical journals
Writing	None
Math	Read assembly drawings, bar and line graphs, schematics, etc. Draw common angles, figures, graphs, assembly drawings, schematics, etc.

Task 2 - Use quality assurance and inspection techniques

Listening	Listen to job instructions Listen to formal instructions Listen to customers' complaints and instructions Listen for abnormal noises Listen carefully Listen actively
Speaking	Inform by giving information, directions or opinions Participate in task conversations Ask pertinent questions Participate in informal conversations with visitors or fellow employees Respond appropriately in problem conversations to a person who is irritated or dissatisfied
Reading	Read forms Read correspondence Look up information on tables or charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Complete forms using sentences and/or paragraphs Write notes or messages Write formal reports
Math	Calculate using whole numbers, fractions, decimals percents Use a calculator Measure weight, distance, volume, thickness, etc. - (U.S. Customary and/or Metric) Convert measurements from one system to another Read assembly drawings, bar and line graphs, schematics, etc. Draw common angles, figures, graphs, assembly drawings, schematics, etc.

DUTY I: UNDERSTAND AND APPLY DIGITAL LOGIC

Task 1 - Identify and understand logic elements

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform Participate in task conversations
Reading	Look up information in reference books Read technical journals

Writing	None
Math	Read assembly drawings Draw common angles

Task 2 - Be familiar with Boolean Algebra

Listening	Listen to job instuctions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform Participate in task conversations
Reading	Look up information on tables Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Write notes or messages
Math	Calculate Determine rate, etc. Use a calculator Measure Convert measurements Use algebra Use scientific notation Read assembly drawings Draw common angles Use Calculus

Task 3 - Use binary, octal, and hexadecimal numbering systems

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform Participate in task conversations
Reading	Look up information on tables or charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Write notes or messages

Math	Calculate Determine rate, etc. Use a calculator Measure Convert measurements Use Algebra Use scientific notation Read assembly drawings Draw common angles Use Calculus

DUTY J: BE FAMILIAR WITH BASIC MICROPROCESSOR SYSTEMS

Task 1 - Understand a block diagram

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform Participate in task conversations
Reading	Look up information in reference books Read technical journals
Writing	None
Math	Read assembly drawings Draw common angles

Task 2 - Have a basic understanding of assembly language

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform
Reading	Read forms Look up information on tables and charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Complete forms using sentences and/or paragraphs Write notes or messages
Math	Convert measurements Read asembly drawings Draw common angles

Task 3 - Write and execute a simple program for manipulation of hardware

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	None
Reading	Read forms Look up information on tables and charts Look up information in reference books
Writing	Complete forms using short phrases and/or numbers Complete forms using sentences and/or paragraphs Write notes or messages
Math	Convert measurements Read asembly drawings Draw common angles

DUTY K: BE FAMILIAR WITH RF

Task 1 - Be familiar with oscillators and resonant circuits

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform
Reading	Look up information on tables and charts Look up information in reference books
Writing	None
Math	None

Task 2 - Be familiar with the use of filters and coupling devices

Listening	Listen to job instructions Listen to formal instructions Listen carefully Listen actively
Speaking	Inform
Reading	Look up information on tables and charts Look up information in reference books

Writing None

Math None

Task 3 - Be familiar with transmission lines and antennas

Listening Listen to job instructions
Listen to formal instructions
Listen carefully
Listen actively

Speaking Inform

Reading Look up information on tables and charts
Look up information in reference books

Writing None

Math None

DUTY L: IDENTIFY COMPONENTS AND MARKINGS

Task 1 - Read color codes

Listening Listen to job instructions
Listen to formal instructions
Listen carefully
Listen actively

Speaking Inform
Participate in task conversations

Reading Look up information on tables and charts
Look up information in reference books

Writing None

Math Calculate
Use a calculator
Convert measurements
Use scientific notation

Task 2 - Read and identify manufacturers markings

Listening Listen to job instructions
Listen to formal instructions
Listen carefully
Listen actively

Speaking	Inform Participate in task conversations
Reading	Look up information on tables and charts Look up information in reference books
Writing	None
Math	Calculate Use a calculator Convert measurements Use scientific notation

Appendix C
Biographical Data

DONALD A. GAILLARD

EDUCATION

B.S. - Speech Therapy, 1966
University of Utah, Salt Lake City, UT

A.S. - Biology, 1961
College of Eastern Utah, Price, UT

Completed a forty-five hour teacher certification program required by Utah Technical College at Salt Lake.

Additional classes taken at University of Utah, Brigham Young University, and Utah Technical College, 1966-1981.

EXPERIENCE

July 1972 - present	Mathematics Instructor Utah Technical College, Salt Lake Skills Center
July 1970 - July 1972	Assistant Director Utah Technical College, Salt Lake Skills Center
Sept. 1963 - July 1970	Coordinator and Instructor Vocational Improvement Program, Salt Lake Center
Sept. 1966 - Sept. 1968	Speech Therapist and Instructor Thiokol Clearfield Job Corps Center

DEBORAH MILLER MOSTAGHEL

EDUCATION

M.A. English and ESL, Shiraz University (formerly Pahlavi University), Feb. 1972

B.A. English, University of California, Berkeley, June 1969

CREDENTIAL

California Community College Credential:
Instructor, Language Arts and Literature

PROFESSIONAL EXPERIENCE

1. Coordinator, English as a Second Language Program
   Salt Lake Skills Center, Utah Technical College
   July, 1982 to the present

2. Instructor of ESL, Salt Lake Skills Center, Utah Technical College,
   December, 1980 - June, 1982

3. Instructor of ESL, College of Marin, Kentfield, California,
   January 1980 - July 1980

4. Assistant Professor of English, Shiraz University, Fall 1979

5. Instructor of English, Shiraz University, 1974-1979

6. On leave at the University of California, Berkeley, 1973-1974

7. Instructor of English, Shiraz University, 1972-1973

8. Instructor, Iran-America Society, 1971-1972

9. Teacher, Shiraz International Community School, 1970-1971

PUBLICATIONS

Articles:

1. Mostaghel, Deborah Miller. "The Second Sadeq: The Short Stories of Iranian Writer Sadeq Chubak." World Literature Today. 53, No. 2 (1979), 227-231.

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